

**Design Memorandum 60**  
**CHIEF JOSEPH DAM–RUFUS WOODS LAKE**  
**PROJECT MASTER PLAN**

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**US Army Corps  
of Engineers®**  
Seattle District

**Draft September 2001**

## VALIDATION

*Design Memorandum 60: Chief Joseph Dam–Rufus Woods Lake Master Plan*, prepared by Engineering/Construction Division, has been coordinated with all pertinent elements of Seattle District, including Operations and Real Estate Divisions. October 2001.

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Chief, Engineering/Construction Division

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Chief, Operations Division

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Chief, Real Estate Division

It is recommended that *Design Memorandum 60: Chief Joseph Dam–Rufus Woods Lake Master Plan* be adopted as a guide to the orderly use, development and management of the natural and related resources of the Chief Joseph Dam project, administered by the Seattle District of the United States Army Corps of Engineers. Land classifications and resource objectives recommended in the plan will provide for sound resource use, development, and management consistent with the authorized project purposes and based on the determination of the highest and best use.

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Cover Photo: Chief Joseph Dam and adjacent lands, looking southeast. Aerial June 4, 2000, S20006 Obl. 1.

## EXECUTIVE SUMMARY

*Design Memorandum 60: Chief Joseph Dam–Rufus Woods Lake Master Plan* has been prepared in accordance with Engineer Regulation 1130-2-550 to guide the use and development of the natural and manmade resources. Chief Joseph Dam and Rufus Woods Lake are operated and maintained by the Seattle District, United States Army Corps of Engineers.

This master plan is a tool for the responsible stewardship of natural and cultural resources to benefit present and future generations, and to promote the awareness of environmental values and the need for protection, conservation and restoration. It identifies and assigns the resource management practices being considered and implemented and is the basis for the preparation of the *Operational Management Plan* to achieve the objectives outlined in this plan. Descriptive information about the Chief Joseph Dam project is in Sections 1 through 4. Resource objectives and management actions for each area are in Sections 5 through 10. Design criteria and recommendations are in Sections 11 and 12.

Chief Joseph Dam and Rufus Woods Lake are primary components of a comprehensive hydropower plan for the Pacific Northwest. The Corps of Engineers administers a total of 16,123.90 acres at this project. This land has been organized into land allocation and land classification categories to prescribe management practices that are appropriate for the primary authorized purpose—hydropower. Land allocation and classification categories consist of Operations: Project Operations (266.17 acres), Operations: Recreation (318.18 acres), Operations: Multiple Resource Management (569.1 acres), Operations: Environmentally Sensitive Areas (37.6 acres), Operations: Mitigation (2,753.29 acres above and below full pool), and Operations: Easements Lands (12,006.70 acres above and below full pool). *Note: Land classification acreage are approximate and represent only lands that were not inundated by Rufus Woods Lake at full pool when the aerial photographs were flown, unless otherwise specified.*

Chief Joseph Dam resource use goals fall into five broad categories—project operations for hydropower as the primary purpose; natural and cultural resources management for present and future generations; recreation and interpretation; and coordination with appropriate groups for proper management. Goals are described in Section 1.

In addition to the management actions listed in this plan, the following overall actions should be taken to assure orderly use, development, and management of Chief Joseph Dam resources: (1) periodic re-evaluation of the identified resource objectives and updating of the master plan as appropriate; (2) development and implementation of a sign plan that is responsive to visitors entering the area; (3) preparation of an *Operational Management Plan*; and (4) preparation of a *Historic Properties Management Plan*.

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# SECTION 1

## INTRODUCTION

## SECTION 1 - INTRODUCTION

### 1.1 PURPOSE

The *Chief Joseph Dam-Rufus Woods Lake Master Plan* (Design Memorandum 60), hereafter referred to as the master plan, will guide and direct the future use, development and management of the natural resources, recreational, and cultural resources management programs of Chief Joseph Dam, which also includes the lands of Rufus Woods Lake. Lands administered by the Corps of Engineers, including fee owned and easement, may be referred to in this master plan as project lands. This master plan does not evaluate the operational aspects of the project for hydropower, nor is it within the scope to do so. All Corps of Engineers Civil Works projects and other fee owned lands are required by Engineer Regulations (ER) 1130-2-540, *Natural Resources Stewardship* and 1130-2-550, *Project Operations - Recreation Operations and Maintenance Policies*, to have master plans. These regulations also provide for periodic review and update.

*Design Memorandum 60: Chief Joseph Dam–Rufus Woods Lake Master Plan*, is the third plan to be prepared for the project. The first master plan, Design Memorandum (DM) 33B, was approved July 1964. Following subsequent changes to the dam, including expansion of the powerhouse and raising of the reservoir, a second plan was developed in 1988 (DM 57) but never approved.

This master plan is a formal land use planning document that identifies and assigns the management practices being considered and implemented on Corps lands. It is the basic document guiding the Corps of Engineers' responsibilities, pursuant to federal laws, to preserve, conserve, restore, maintain, manage, and develop lands, waters and related resources associated with Corps lands on and around Chief Joseph Dam. Subsequent planning, design, development and management decisions, including outgrants, will be consistent with the land use classifications and resource objectives assigned and established in this master plan. The master plan is both flexible and conceptual by design and is subject to revision and updating as indicated by changing needs and conditions. The current *Operational Management Plan* (OMP) will be updated to implement the concepts of this master plan.

### 1.2 SCOPE

This master plan assesses Chief Joseph Dam and Rufus Woods Lake resources in order to develop guidelines that provide for their best and highest use, development and management. Evaluation is focused specifically on lands administered by the Corps of Engineers and includes consideration of cultural, biological, and scenic values. The primary scope is to prescribe an overall land and water management plan for the natural resources, recreational, and cultural resources management programs; establish resource objectives for these programs; and present associated design and

management concepts. It provides a guide for the best possible combination of responses to regional needs, resource capabilities and suitability, and expressed public interests and desires consistent with Chief Joseph Dam's authorized purposes, historic designation, and other institutional policies and directives. It is based on a thorough understanding of the operation of Chief Joseph Dam and Rufus Woods Lake, and of the land and facility requirements. Land classifications and resource management prescriptions are formulated to be in harmony with these requirements.

### **1.3 PLAN FORMULATION**

This master plan has been formulated utilizing the study framework depicted in Figure 1-1. The process was initially developed in the Northwestern Division of the Corps of Engineers as a means to improve the quality and usefulness of Corps master plans and to reduce the long-term cost of the master planning program. Redesign of the framework was completed in the Seattle District office to simplify the process. Major outputs include the elements listed below that are in accordance with the intent of Chapters 3 of ER and Engineering Pamphlet (EP) 1130-2-550.

1.3.1 Establishment of Chief Joseph Dam resource use goals which are listed in Section 1.4 below.

1.3.2 Assignment of land classifications and restricted water use zones to dam lands (Section 4).

1.3.3 Establishment of resource objectives for areas in which land classifications has been assigned (Sections 5 through 10).

1.3.4 Identification of management and development measures for accomplishing resource objectives (Sections 5 through 10).

1.3.5 Identification of major constraints that might hinder accomplishment of resource objectives (Sections 5 through 10).

1.3.6 Specification of design criteria to be considered in future design phases of plan implementation (Section 11).

1.3.7 Recommendations for subsequent aspects of planning for use, development, and management of project resources (Section 12).

### **1.4 CHIEF JOSEPH DAM RESOURCE USE GOALS**

Resource goals provide the overall framework that guide the use of resources administered by the Corps of Engineers at a project site. The goals listed below and objectives listed within this master plan are specific to Chief Joseph Dam and its

individual areas, and specify attainable options for resource development and management. They have been developed through study and analysis of regional needs, expressed public desires, and resource capabilities and potentials, and are formulated to guide and direct the overall resource management program.

1.4.1 Project Operations. To provide hydropower as the primary purpose of Chief Joseph Dam.

1.4.2 Natural and Cultural Resources Management.

- a. To allow public access and use of Corps fee-owned and public domain lands, as appropriate, around Chief Joseph Dam.
- b. To make Chief Joseph Dam lands specifically available to school groups for environmental educational activities.
- c. To protect and preserve archeological and historical sites.
- d. To protect and enhance fish and wildlife habitat.
- e. To control noxious weeds and other undesirable weed species.

1.4.3 Recreation and Interpretation.

- a. To encourage public visitation.
- b. To provide high quality, safe recreational facilities year-round to a wide segment of society, including individuals with disabilities.
- c. To minimize conflicts between user groups and Corps of Engineers operational requirements.
- d. To enhance visitor enjoyment of Chief Joseph Dam public land.

1.4.4 Coordination. To maintain communication and coordination with appropriate Indian tribes; federal, state, and local agencies; citizen groups and organizations for proper management of the manmade and natural resources of Chief Joseph Dam and Rufus Woods Lake.

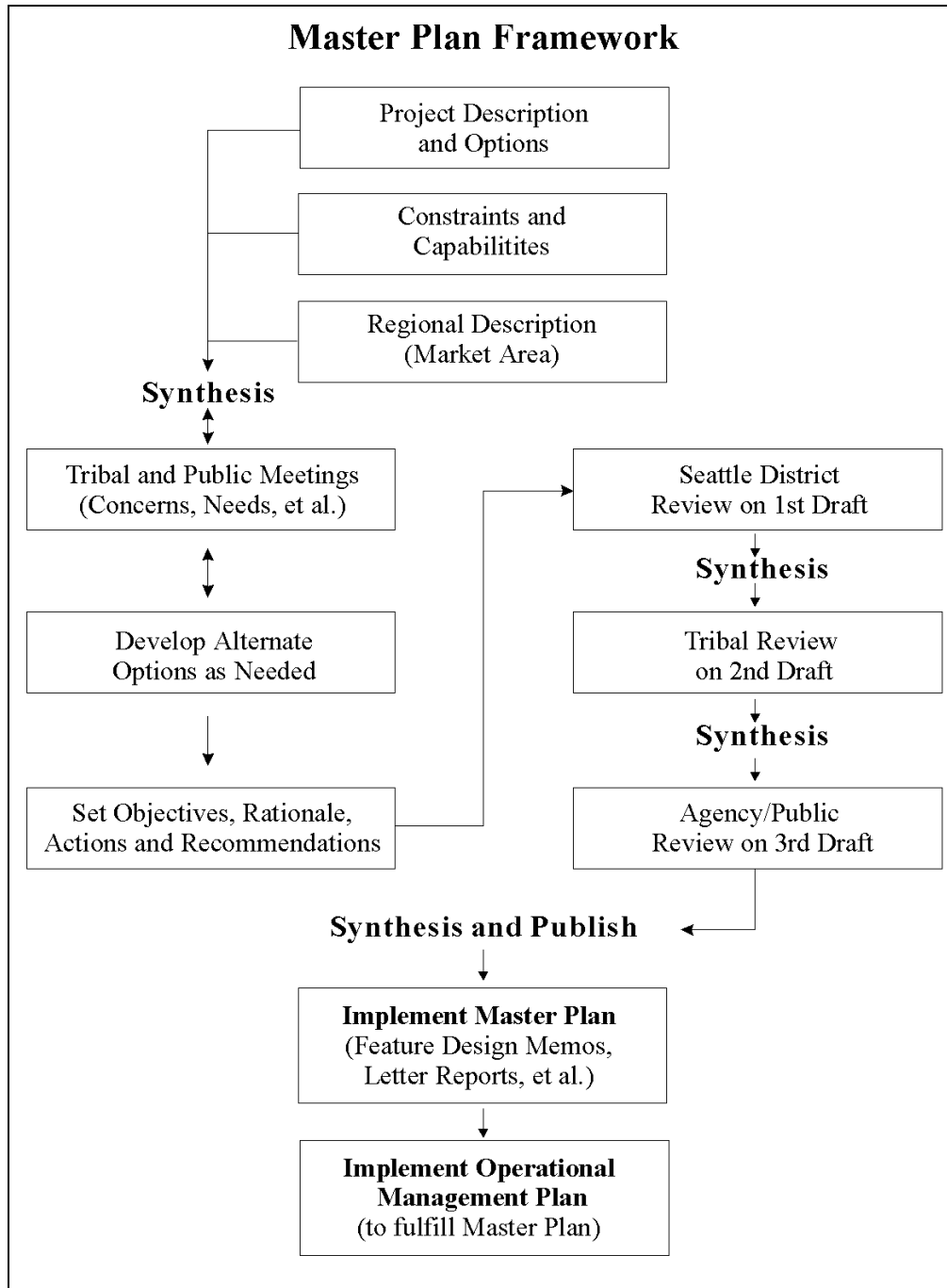


Figure 1-1: Master plan framework showing the development and finalization path.

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## **SECTION 2**

### **PROJECT DESCRIPTION**

## SECTION 2 - PROJECT DESCRIPTION

### 2.1 AUTHORIZATION

The River and Harbor Act of 1946 authorized the construction, repair, and preservation of certain public works on rivers and harbors for navigation, flood control, and for other purposes. Authorization for the construction of Foster Creek Dam and a powerhouse on the Columbia River in Washington State was provided for under this Act dated July 24, 1946 (Public Law (PL) 79-525), and in accordance with the survey report dated April 9, 1946 submitted by the Chief of Engineers in House Document 693 (79<sup>th</sup> Cong., 2d Sess., July 3, 1946). On July 11, 1969, 11 additional units were recommended along with a 10-foot pool raise to a maximum pool elevation of 956 feet. Authorization for this expansion was provided in House Document 693. Phase I construction of the dam and units 1 through 16 began in 1949 with completion in 1958. Phase II construction for units 17 through 27 began in 1973 with completion in 1979. In a draft Environmental Impact Statement (EIS) for the additional units beyond 27 (November 1977), two additional generating units had been proposed. If authorized and funds appropriated, units 28 and 29 would have been on-line in the mid-1990's. The proposal was terminated in the late 1970's because the increased capacity was not needed at that time.

Legislation to rename the dam from Foster Creek Dam to Chief Joseph Dam was signed June 30, 1948 in the River and Harbor Act of 1948 (PL 80-858). The dam was named in honor of the Nez Perce Chief of the Plateau Tribe's Wallowa Band. A man of peace, it was Chief Joseph who held the United States Army at bay through a running 5-month battle that crossed mountain country from White Bird Canyon, Idaho, to the hills of Bear Paw, Montana. He surrendered on October 5, 1877. After several relocations, Chief Joseph spent his last years in exile on the Colville Indian Reservation. He died September 21, 1904, and is buried near Nespelem, Washington, about 35 miles upstream of the dam.

The lake created behind Chief Joseph Dam was designated Rufus Woods Lake on July 9, 1952, in PL 82-469. The late Mr. Rufus Woods was publisher of the *Wenatchee Daily World* newspaper in central Washington, and a member of three Columbia Basin Commissions. He was instrumental in gaining support for a dam on the Columbia River to generate hydropower and irrigation. His efforts resulted in the authorization of Grand Coulee Dam. Mr. Woods furthered his support efforts for additional dams on the Columbia as World War II ended. The need for additional power was crucial to regional aluminum plants that produced the metal for construction of warplanes and for the Hanford Works. Mr. Woods' efforts resulted in the authorization for construction of Foster Creek Dam.



## **2.2 AUTHORIZED PURPOSES**

Recommendations by the Chief of Engineers in House Document 693, and with concurrence from local interests, were to develop the Columbia River in the interest of hydroelectric power. This included construction of a dam and powerhouse, and creation of a lake on the Columbia River. Subsequent legislation augmented the missions of the U.S. Army Corps of Engineers, thus Chief Joseph Dam currently operates in the interest of a variety of purposes as described below.

2.2.1 Hydropower. This was the primary mission for constructing Chief Joseph Dam and remains an authorized purpose. The dam passes the water released from Grand Coulee Dam and settles out the power peaks during normal operations.

2.2.2 Flood control. Although flood control was not an initial objective for Chief Joseph Dam, the dam and Rufus Woods Lake have been, and continue to be, regulated for flood damage reduction.

2.2.3 Navigation. Rufus Woods Lake is classified as a navigable waterway—waters that are subject to the ebb and flow of the tide, and/or presently used or have been used in the past or may be susceptible for use to transport interstate or foreign commerce. The Corps' navigation mission is to provide safe, reliable and efficient waterborne transportation systems for movement of commerce, national security needs, and recreation. Tour and fishing guide boats on Rufus Woods Lake are commercial enterprises. Recreation on the lake is clearly represented in the traffic along the waterway.

The Seattle District Regulatory Branch plays an important role on and around the lake. Appropriate permits are issued in compliance with Section 10 of the River and Harbor Act of 1899 (March 3, 1899: federal law prohibits the commencement of any work in traditional navigable waters of the United States without a permit from the Corps of Engineers), in compliance with Section 404 of the Clean Water Act (federal law prohibits the discharge of dredged or fill material into waters of the United States, which includes wetlands, without a U.S. Department of the Army permit issued by the Corps of Engineers), and through requirements specified on the Joint Aquatic Resources Permit Application.

2.2.4 Irrigation. Historical congressional documents are unclear whether irrigation was authorized as a secondary purpose. However, it is a resulting benefit. The dam includes irrigation structures which supplies water to Bridgeport Irrigation District and for the Corps' use. The U.S. Department of Interior's Bureau of Reclamation (BOR) manages this system. However, Chief Joseph Dam and Rufus Woods Lake are not regulated for this purpose.

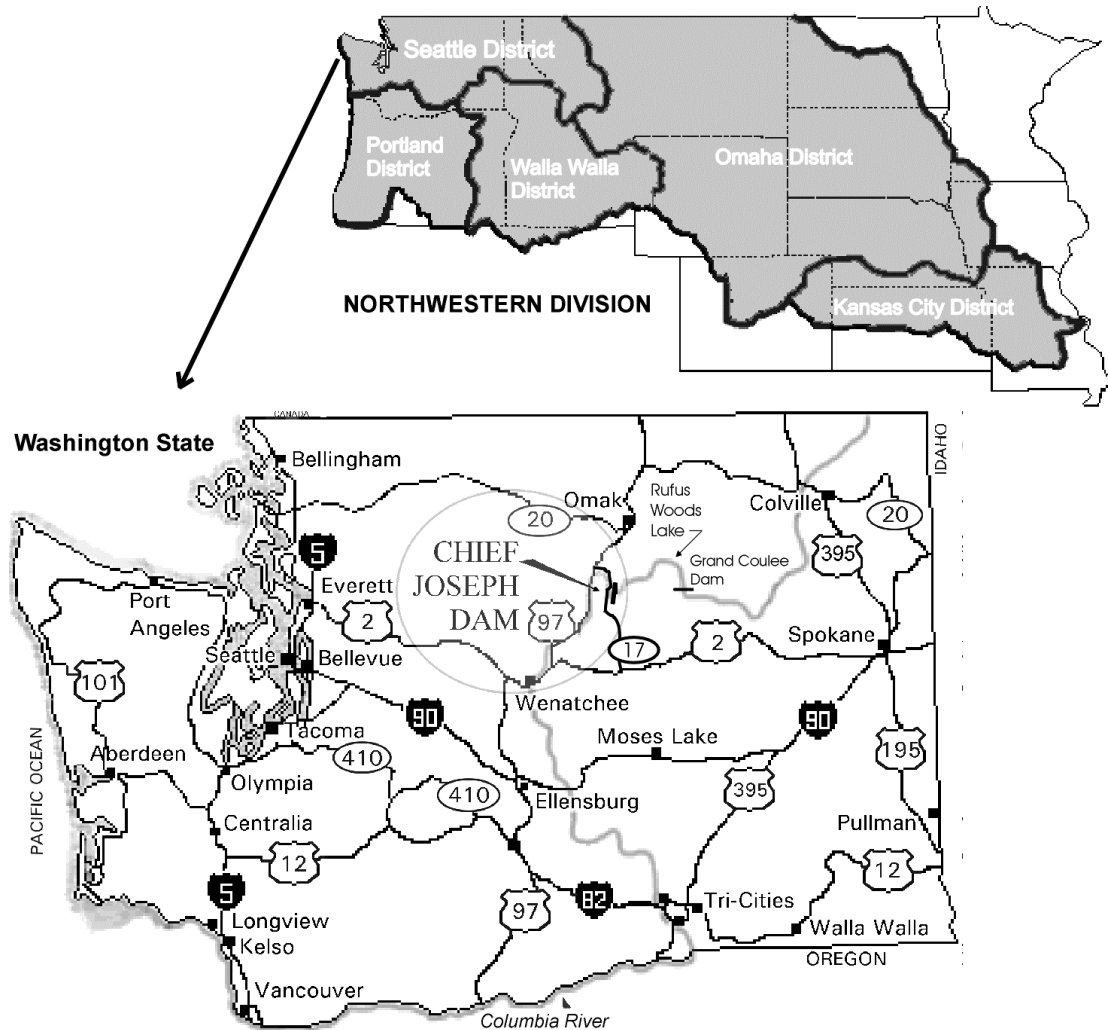
2.2.5 Recreation. The Flood Control–Construction Act of 1944 (December 22, 1944; PL 78-534) authorized the construction, maintenance, and operation of public park and recreational facilities at all Corps of Engineers’ projects. Recreation access and facilities at Chief Joseph Dam are provided as an authorized purpose, but Rufus Woods Lake is not specifically controlled for this purpose. Subsequent legislation, primarily PL 89-72, Federal Water Project Recreation Act (July 9, 1965), directs that full consideration be given to recreation and fish and wildlife enhancement as purposes of federal water resources projects. The Corps has long recognized recreational development as a full-scale purpose on an equal basis with other established purposes of water resources development. Provision to construct Bridgeport State Park on Corps land was provided under House Document 693.

2.2.6 Environmental stewardship. The Corps' natural resources management mission is to conserve natural and cultural resources while providing quality public outdoor recreation experiences to serve the needs of present and future generations. The Corps promotes awareness of environmental values and adheres to sound environmental stewardship, protection, compliance and restoration practices. Management is for long-term public access to and use of the resources in cooperation with other federal, state, and local agencies and the private sector.

2.2.7 Emergency preparedness. This is important to national security and the health and well being of the community. Chief Joseph Dam and the Seattle District Corps of Engineers’ staff are required to actively participate in emergency management planning to prepare for and respond to natural and national emergencies. For instance, Chief Joseph Dam staff are on emergency flood fighting teams who also conduct annual sand bagging exercises with the general public; natural resources management personnel are regularly trained in advanced first aid for responding to accidents occurring on Chief Joseph Dam lands and Rufus Woods Lake; some employees have fire fighting experience; and following an earthquake, various employees inspect assigned areas and report to the project manager who determines if assistance is needed.

## **2.3 LOCATION**

Chief Joseph Dam and Rufus Woods Lake are located in north central Washington 545.5 miles upstream from the mouth of the Columbia River. It is immediately upstream from the city of Bridgeport and is approximately 220 miles east of the city of Seattle (see Figure 2-1). Corps of Engineers’ jurisdiction on Rufus Woods Lake extends 45 miles upstream from the dam to river mile (RM) 590—six miles downstream from Grand Coulee Dam. The BOR administers Rufus Woods Lake between RM 590 (the Seaton’s Grove boat ramp) and Grand Coulee Dam.



**Figure 2-1: Site of Chief Joseph Dam and Rufus Woods Lake.**

## **2.4 PERTINENT DATA**

Chief Joseph Dam is one of six dams operated by the Seattle District within the Northwestern Division of the U.S. Army Corps of Engineers. It is the Corps' largest power-producing dam and the largest of the three Seattle District's hydropower projects. Chief Joseph Dam houses 27 power units in a straight-line powerhouse. With the addition of units 17 through 27 in 1979, the increased hydraulic capacity significantly reduced spillage. In February 1981, Rufus Woods Lake was raised 10 feet to help meet peak demands for power. Units 1 through 16 were upgraded between 1983 and 1988 by rewinding the generators and upgrading the transformers and ancillary equipment. A detailed description of the dam and related structures can be found in Section 5, Operations: Project Operations. Pertinent data about Chief Joseph Dam and Rufus Woods Lake is included in Appendix A. On the Internet at [www.nws.usace.army.mil/opdiv/cj/chiefjo.htm](http://www.nws.usace.army.mil/opdiv/cj/chiefjo.htm), more general information

can be found. Topics include a discussion about the dam and its history, coordination between the Corps of Engineers and the U.S. Department of Energy's Bonneville Power Administration (BPA), recreation areas for public use, wildlife found along the lake, and the Corps' archeological program.

## **2.5 HISTORY**

Before 1933, studies had been performed by the BOR and the United States (U.S.) Army Corps of Engineers. These studies focused on the resource uses of the Columbia River for hydropower, navigation, irrigation, and flood control. Selection of an ultimate development plan for each of the various sections of the Columbia River was one of the last steps in the studies made by the district engineers. By consolidating these plans, a comprehensive plan for the entire river had been prepared. Results from these studies eventually included the authorization of Grand Coulee and Bonneville dams in 1935. The Foster Creek Dam project was among the various sites being studied for further development.

Several dam sites were investigated but differences in engineering problems, estimated costs, present power capabilities, and potentials for ultimate expansion decisively favored the location studied farthest downstream, one-quarter mile upstream of Foster Creek. Production of electric power would be the primary function of the proposed Foster Creek Dam project. Navigation on the Columbia River would be blocked at Grand Coulee Dam, but since river traffic had ceased with the coming of railroads and automobiles, slack-water navigation upstream to Grand Coulee would be provided on the reservoir behind Foster Creek Dam. Irrigation would be accomplished by canals from the Foster Creek reservoir and by direct pumping from the Okanogan River or from the Columbia River below Foster Creek without the construction of a canal. Flood control was not an issue as the proposed reservoir would be too small to have any noticeable effect during damaging floods. Sport fishing and recreation would be benefited by the creation of a lake behind the dam.

In 1945, public hearings were held regarding the construction of Foster Creek Dam. Federal and state legislators and governmental agencies were involved in further hearings the following year. There was wide interest for the project, all comments and testimonies without a single exception were favorable. Colonel Conrad P. Hardy, district engineer stated at the 1945 hearing, "Never have I seen such a hearing—such a unanimity of opinion. The project offers no fish problem, no navigation problem, and no valuable lands or improvements of any kind will be inundated."<sup>1</sup> Washington State Congressman, Henry M. Jackson, is quoted from the April 29, 1946, hearing as saying, "Our state of Washington has no natural gas and no oil for lights, for cooking or for industry, such as many other states have. Thus, with

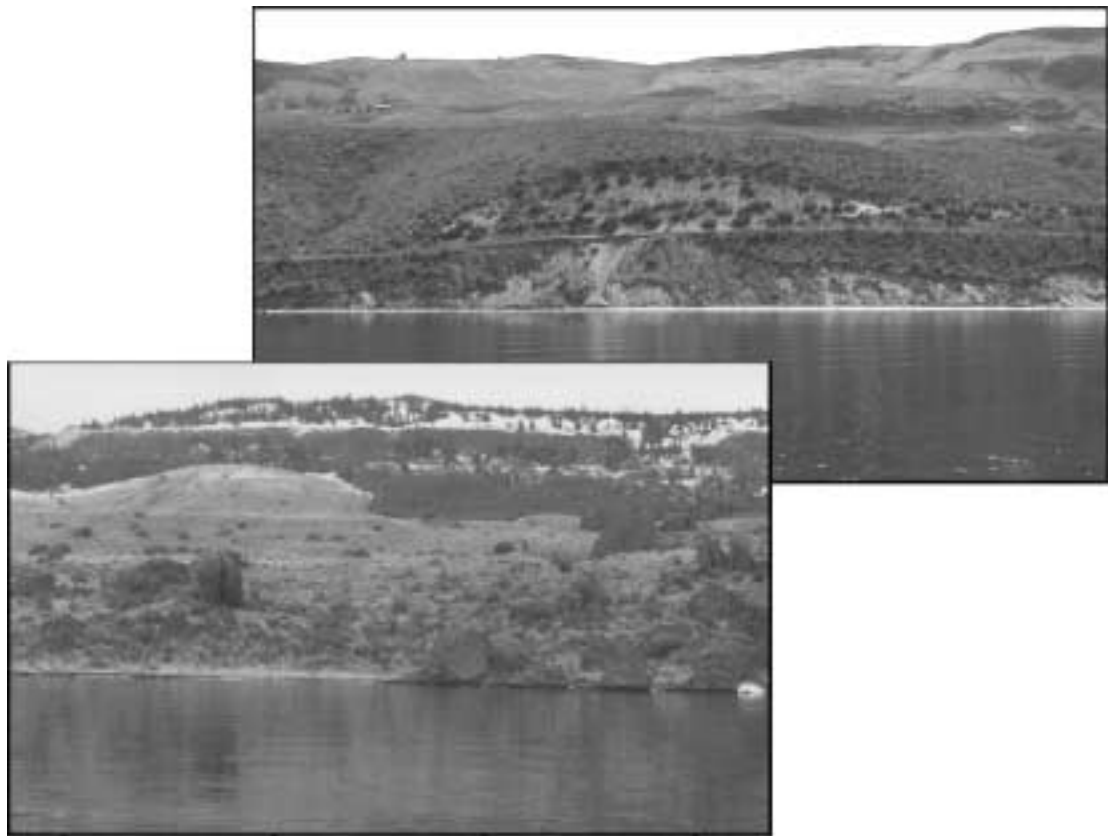
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<sup>1</sup> "Hearings Before the Committee on Rivers and Harbors" for the improvement of the Columbia River (Foster Creek Dam, Wash.); H. of Rep, 79th Cong, 2d sess, April 29, 1946; pp. 3, 4.

the Columbia running past our door, this seems a needless waste of natural wealth...Its power will annually produce the materials for many battleships, bombs, planes, and whatever is needed. I cannot overemphasize its importance to national defense.”<sup>1</sup>

## 2.6 SETTING

Chief Joseph Dam and Rufus Woods Lake lie in a steep-sided canyon of the Columbia River valley. The north side of the valley rises sharply to the Okanogan Highlands, 1,000 feet or more above the Columbia River. The south side of the valley rises in a series of terraces and benches climbing to the Columbia Plateau surface (see Photo 2-1). The majority of the shoreline is treeless with a dry land shrub-steppe cover. Numerous canyons and deep draws support isolated stands of pine and deciduous trees and shrubs. Irrigated orchards on upland benches and 6 irrigated wildlife mitigation sites along the lakeshore provide islands of greenery. Scenic areas include the badlands-like area at RM 588, a resistant silt cliff at RM 574, and wind-cut sandy formations from RM 564 to RM 568. In addition, nearly 300 prehistoric and historic cultural resource sites are located within the Chief Joseph Dam project boundary.



**Photo 2-1: Columbia River valley. Left bank (south shore, bottom) showing terraces and benches, and right bank (north shore, top) showing steep cliffs. March 1996 and April 2001.**

## **2.7 LANDS ADMINISTERED BY THE CORPS OF ENGINEERS**

Corps of Engineers real estate interests surrounding Chief Joseph Dam consists of 16,123.90 acres.<sup>2</sup> Of these, 1,687.83 acres are owned in fee, 2,424.52 acres are held in public domain, and 12,006.70 acres are easement lands. An additional 4.85 acres are used for other interests. Public domain land is government-owned land administered by the U.S. Department of Interior's Bureau of Land Management (BLM) that has been withdrawn for use by the Corps in connection with the operation of Chief Joseph Dam. Refer to Appendix B for a summary of public domain lands and Plate B-1 for locations. The Confederated Tribes of the Colville Reservation (hereinafter referred to as the Colville Confederated Tribes, CCT) own the river bottom from the midline (of the original Columbia River channel before the dam was constructed) to the Okanogan County side. The Washington State Department of Natural Resources owns the river bottom from the midline to the Douglas County side. The Corps obtained easements to flood non-fee lands up to the authorized maximum pool elevation of 956 feet at the dam (see Section 2.9.1, Reservoir Operations) as part of Chief Joseph Dam's authorization. Further real estate information is in Appendix B.

2.7.1 Related Lands Administered by Others. The Confederated Tribes of the Colville Reservation exercise control over the north shoreline (right bank) in Okanogan County that lies within Colville Indian Reservation boundaries. The BOR has jurisdiction over lands from RM 590 upstream. In addition, the BLM administers substantial areas of public land adjoining the lake in Douglas County (see Appendix B for Memorandum of Agreement between the Secretaries of the Army and the Interior).

2.7.2 Corps of Engineers Outgrants. The Corps has issued outgrants to private landowners, public agencies and local utility companies on Corps fee owned lands. Most are easements for road rights-of-way, aboveground and underground powerlines, underground phone lines, and waterlines. Other outgrants such as permits, leases and consents have also been issued. Major examples include 283.15 acres of fee land along the north shore (right bank) of the lake leased to the State of Washington Parks and Recreation Commission for public park and recreation purposes (Bridgeport State Park and Lake Woods Golf Course); the downstream boat ramp (0.83 acres) is leased to the city of Bridgeport for park and recreation purposes; and a portion of the Nespelem River site is outgranted to the CCT for a well and pipeline

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<sup>2</sup> Total realty interests (16,123.90 acres of fee, easement, public domain, and other lesser interests) acquired by the Corps includes land above and below the water. For example, those lands below the existing ordinary high water level and above the ordinary high water level of the Columbia River in 1945.

system. Other major outgrants include three fish farms that have been granted consent for fish farming operations on Rufus Woods Lake: two are located in Okanogan County and one is located in Douglas County. See Section 2.14, Fish and Fisheries, for more information on commercial fish operations. See Appendix B for additional outgrants.

2.7.3 Project Lands Reported as Excess. In 1988, approximately 367.18 acres of fee title land and 3.6 acres of easement were recommended to the General Services Administration (GSA) as excess to Corps of Engineers needs. These lands included the following sites: land and bridges associated with State Route (SR) 17 in Okanogan and Douglas Counties, Washington, comprised of 264.85 acres fee title and 3.6 acres easement; an 87.8-acre area comprised of the BPA substation and buffer area; and 14.53 acres of the left bank wildlife management area. These lands were eventually excessed. Although most of the land associated with SR 17 is no longer owned by the Corps, the Corps retains easement from the Washington State Department of Transportation (WSDOT) for 38.58 acres for right of continued access along a portion of SR 17 at the Okanogan bridge. In addition, some fee and easement lands associated with SR 17 and the Columbia River bridge have been retained and are explained in Sections 5.7 (Columbia River Bridge) and 10.3.1 (Miscellaneous Easements).

## **2.8 ACCESS**

Many areas of Rufus Woods Lake have limited or no road access due to remoteness and the steep topography surrounding the lake. State Route 97, extending south from Canada through Washington, passes within eight miles of the dam. State Routes 17, 155, 173, and 174 provide the main access to the dam (see Figure 2-1). Two public boat ramps near the dam provide access to the lower end of the lake—one operated by the Corps of Engineers on the left bank (looking downstream) and another by Bridgeport State Park on the right bank. A public ramp located at RM 590 (the Seaton's Grove boat ramp) is operated by the BOR and provides access to the upper portion of the lake. Two boat ramps in Bridgeport, one owned by the Corps and one by the city of Bridgeport, provide boat access to the upper reach of Lake Pateros, just downstream from Chief Joseph Dam. Both boat ramps are operated by the city of Bridgeport.

## **2.9 RESERVOIR OPERATION**

2.9.1 General. The Corps of Engineers has undergone a general shift to a more adaptive management approach and is currently involved with other agencies in their resource management activities. Since the time of the original authorization, priorities have changed in the watershed (such as the social and economic importance of recreational uses) and new information is available

about the life cycle and habitat needs of many fish species. Additional considerations that were not in place when the Foster Creek Dam project was authorized have also been placed on the river, such as balancing tribal rights and development pressure. The new information and the new demands on the Columbia River now play an important role in current water management decisions. Water management of Rufus Woods Lake is a complex task involving decisions that directly involve many issues of local and regional importance. It relies heavily on input from several outside agencies and interested parties. The demands for water among various agencies, resources, and water users are often competitive. While they are not necessarily mutually exclusive or conflicting, they increase the complexity of water management.

Rufus Woods Lake is subject to fluctuation caused by the operation of Grand Coulee and Chief Joseph dams as flows are varied to meet power system loads. These loads are typically high during the day and low at night, leading to daily water surface elevation changes as power system loads fluctuate. Recent power pondage studies have indicated the Chief Joseph Dam forebay elevations could fluctuate about six to seven feet per day at a rate of one to two feet per hour during the wintertime. Somewhat less fluctuation (one-three feet) is expected to occur during the summer months. Studies also show that Grand Coulee Dam tailwater could fluctuate 15 to 16 feet per day at a 3- to 4-foot per hour rate if operation of the powerplant at Grand Coulee Dam was unrestricted. However, due to the instability of embankments below the dam, a restriction on Grand Coulee's hydropeaking operation has resulted in substantially less hourly fluctuation.

Full operating range of Rufus Woods Lake is 26 feet (from elevation 930 to 956 feet at the dam) but use of this range is very infrequent. Generally, the dam operates with a forebay elevation between 950 and 956 feet.

2.9.2 Operation Responsibility. Various branches in the Corps of Engineers' Northwestern Division office and the Seattle District office hold responsibility for operation of the dam and applicable land management. Below is a list of the general responsibilities.

- a. Northwestern Division. The North Pacific Region Reservoir Control Center is responsible for the hourly coordination of Columbia River operations, including the amount, timing and quality of water in Rufus Woods Lake. Responds to requests for changes in operation from outside entities and must deal with multiple, sometimes competing, interest groups and unpredictable weather situations.
- b. Seattle District, Engineering/Construction Division.



- 1) Technical Services Branch. Provides structural and operational guidance, emergency action planning, safety inspections, safety systems, and hazardous and toxic waste assessments.
  - 2) Hydrology and Hydraulics Section. Responsible for non-system technical studies and technical support associated with the amount, timing, and quality of water in Rufus Woods Lake and with the hydraulic design of Chief Joseph Dam. Represents the interests of Chief Joseph Dam within several multi-agency, regional forums. Coordinates special operations with Northwestern Division's North Pacific Region Reservoir Control Center.
- c. Seattle District, Programs and Project Management Division.
- 1) Civil Works and Planning Branch. Provides technical and planning support for dam and river operation, habitat restoration and enhancement activities for fish and wildlife (such as Section 1135 activities which are further supported by the Environmental Resources Section), and coordinates resource studies and other issues. Not always directly involved with operations.
  - 2) Environmental Resources Section. Provides technical support for fish and wildlife issues, cultural resources requirements, and Indian tribal coordination, as well as for compliance with laws and regulations for environmental and historic preservation.
- d. Seattle District, Operations Division.
- 1) Chief of Operations Division. Assures staffing and safety of Chief Joseph Dam personnel.
  - 2) Chief Joseph Dam on-site personnel. Operate and maintain the dam on a day-to-day basis, including the physical dam structure, roads, equipment, and reservoir area. Under normal conditions, respond to requests for changes in release rates from the Hydrology and Hydraulics Section.

Manage applicable land in support of fish and wildlife, cultural resources, tribal concerns, and public recreation.

- 3) Regulatory Branch. Until the late 1960's, the primary purpose of the regulatory program was to protect navigation. Since then, in response to changing environmental, social and economic

conditions, the scope of the program has been broadened. Today, the Corps' Regulatory program concerns not only the integrity of traditional navigable waters, but also the quality of waters of the United States, from wetlands to the territorial seas. Regulatory Branch issues Section 10 Permits for construction in navigable waterways. For example, it issues Section 10 Permits for the commercial fish farms in Rufus Woods Lake.

4) Technical Support Branch. Coordinates budgetary resources, oversees management of the natural resources, and assures environmental compliance.

2.9.3 Dam Operation and Water Management. Water management activities involving Chief Joseph Dam are coordinated hourly through the the Northwestern Division's North Pacific Region Reservoir Control Center. The Seattle District Hydrology and Hydrology Section provides technical support and conducts technical studies as needed. Reservoir regulators determine hourly dam releases primarily for the authorized purpose of hydropower generation. Rufus Woods Lake is a run-of-the-river reservoir meaning its outflow usually approximates its inflow, and its level remains relatively stable. Most of the 14 Federal Columbia River Power System (FCRPS) dams are run-of-the-river projects.

In contrast, storage reservoirs such as Lake Roosevelt at Grand Coulee Dam, fluctuate more dramatically over the year and can thus provide flood control and water storage for power generation and other purposes. Storage reservoirs have operational flexibility during late spring, summer, and early fall. Timing and rate of refill is coordinated with tribal, federal, state, local, and public interest groups. Special fishery operations at Grand Coulee Dam are coordinated to augment flows below the dam primarily for juvenile salmonids in the spring and summer and adult salmon throughout the fall.

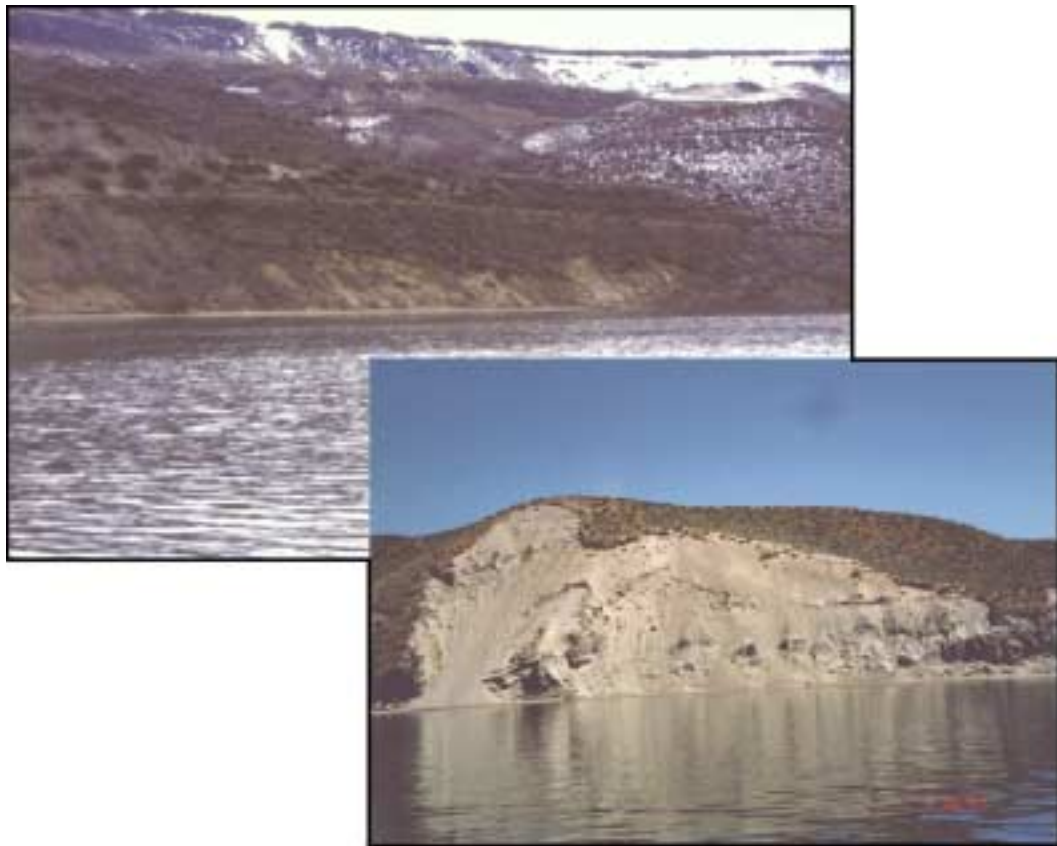
## **2.10 GEOLOGY**

The Chief Joseph Dam and Rufus Woods Lake area is geologically complex. Effects of continental glaciation and fluvial erosion and deposition were major factors in shaping the local terrain.

The granitic Okanogan Highlands occupy the area north of the Columbia River valley. This is an area characterized by moderately steep, forested slopes and broad rounded summits up to 7,000 feet in elevation. Present configurations of the highlands are the result of Tertiary erosion and Pleistocene glaciation. To the south of the Columbia River valley lies the Columbia Plateau, which is composed of Miocene basaltic lava flows with an aggregate thickness of 6,000 feet. In the contact zone

between the basaltic plateau and the granitic highlands, the Columbia River has cut a canyon 2 to 4 miles wide with a maximum depth of 1,500 feet.

Glacial advances and retreats have filled the Columbia River valley with outwash, lake deposits, glacial till, and other related deposits. Post-glacial fluvial cutting of these deposits produced a complex array of terraces at elevations ranging from 1,880 to 800 feet mean sea level. Major land surfaces within the valley include: sands and gravels; glacial till composed of compact sand, gravel, silt, and clay; glacial lake deposits consisting of silt, clay, and fine sand; and old landslide deposits. Most of the arable soils are located on level or gently curving terrace surfaces, are alluvial in origin, and overlie either bedrock or some variety of glacial deposits. Locally extensive fields of “erratics” are found on both sides of the valley at virtually any elevation. These basalt blocks were “let down” as the Columbia River re-excavated its valley following de-glaciation.



**Photo 2-2: Erosion on Rufus Woods Lake. Sloughing in 1997 resulting from a period of extremely high water flow. Minor sloughing began after the 1981 pool raise (lower insert). Upstream from wildlife mitigation site 12 on the left bank. July 1996. The prehistoric Bridgeport Slide Area (upper photo) is upstream from Chief Joseph Dam on the left bank. March 1999.**

Landslides and erosion are common in the deep canyon, which is partially filled with thick deposits of fine-grain sediments (see Photo 2-2). Glacial lake and old

landslide deposits tend to slough more easily than other materials, but well-drained sands and gravels tend to be quite stable, even if of considerable height. Moderate slumping will tend to occur on glacial till undercut by wave action as well as in deposits vulnerable to high ground water levels. Several major prehistoric and historic landslides have occurred in the dam and lake area. Of particular importance is the post-glacial Bridgeport Slide that occurred just upstream from the dam on the left bank (refer to Plate 4-2 for the location of this area and Photo 2-2). This land is presently administered by the Corps and is allocated to Operations to allow for slide monitoring. Slides along the upstream portion of Rufus Woods Lake downstream from Elmer City were active during the middle and late 1940's as a result of rapid tailwater fluctuations at Grand Coulee Dam. These slides became quiescent after 1953, probably due to lesser fluctuation as a result of the raising of the lake. In 1970, construction for the third powerplant at Grand Coulee Dam precipitated additional sliding and riprap was added to control these slides. Furthermore, impoundment of Rufus Woods Lake has caused sloughing near Bridgeport State Park and upstream from China Creek at RM 575 on the south shore (left bank). Many areas are sloughing to a lesser degree along the reservoir periphery, some due to reservoir operation and some a result of upland irrigation.

## **2.11 CLIMATE**

The climate near Chief Joseph Dam and Rufus Woods Lake is semiarid, typical of north central Washington. Temperatures range from -20° F. in winter to over 110° F. in summer, averaging 35° and 75° respectively. Precipitation ranges from 7 to 20 inches annually, averaging just over 10 inches year-round, with approximately 1.5 inches per month in the winter and 0.5 inches per month in the summer. Snowfall occurs November through March.

## **2.12 VEGETATION COMMUNITIES, WILDLIFE HABITATS, AND WILDLIFE**

This section addresses the types of vegetation and wildlife found around Chief Joseph Dam and Rufus Woods Lake for which the Corps has a real estate interest (fee owned, public domain, and easement lands). Lists of common and scientific names of vegetation and wildlife species known and suspected to occur on Chief Joseph Dam lands are included in Appendix D.

Four major plant communities exist within the dam and lake area: (1) *Artemisia tridentata*/*Agropyron spicatum* (big sagebrush and bluebunch wheatgrass); (2) *Artemisia tripartite*/*Festuca idahoensis* (threetip sagebrush and Idaho fescue); (3) the riparian streamside plant communities; and (4) a coniferous tree community.

The most extensive is the *Artemisia tridentata*/*Agropyron spicatum* (big sagebrush and bluebunch wheatgrass) community, in which big sagebrush and

bluebunch wheatgrass are the dominant species.-The big sagebrush/wheatgrass community and the threetip sagebrush/ fescue community are characteristic of the arid steppe province of the Columbia basin. Because these two communities are very similar structurally—both consist of a primary shrub layer and an understory dominated by grasses and herbaceous plants—they are discussed together. These two communities are distributed in response to total and seasonal distribution of precipitation, the threetip sagebrush/fescue community being established in somewhat moister areas. Franklin and Dyrness (1988)<sup>3</sup> indicate that the right bank of the Columbia River supports the sage/fescue community eastward from the Omak Trench into the Okanogan Highlands.

Contrary to the impression which the term riparian (or streamside) evokes, the riparian plant community of Rufus Woods Lake is not continuously established along the banks. Only in areas able to retain moisture, such as small spring-fed draws and river islands, is ample water available to support the species which compose this community. In many areas, bank sloughing has removed the soil from the shoreline, preventing riparian plant establishment. Although the riparian community is spatially limited, it constitutes a very important habitat, providing food and cover for both game and non-game wildlife. The availability of cover and food is particularly critical to wildlife in the winter months. Often fauna that ordinarily feed in non-riparian areas are unable to utilize this food source during periods of snow cover, and depend on the riparian habitat for survival during such adverse conditions.

The fourth community can be loosely described as a coniferous tree community. Ponderosa pine is the most common tree, often appearing singly or in small groups, and occasionally in large concentrations. Douglas fir is found on a few north facing, moister slopes, and a few individuals of Rocky Mountain juniper are scattered along the Rufus Woods Lake. Extensive plantings have been established on some of the wildlife mitigation sites. These plantings, intended to mimic riparian and forested habitats, are described in Section 9, Operations: Mitigation.

2.12.1 Big Sagebrush/Wheatgrass and Threetip Sagebrush/Fescue Communities. These two communities are discussed together because their characteristics are very similar. These shrub-steppe habitats support resident and wintering mule deer, as well as bobcats, badgers, coyotes, cottontail rabbits, yellow-bellied marmots, and several species of mice, voles, and bats. A 5-year mule deer study was conducted from 1982 to 1987 (refer to Section 9.2, Mitigation Program Evaluation, for a more detailed explanation). One of its objectives was to determine how shrub-steppe was utilized in terms of what plants were eaten and their relative importance to mule deer, seasons of use, and how important shrub-steppe is during migration. The study concluded

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<sup>3</sup> Jerry F. Franklin and C.T. Dyrness, *Natural Vegetation of Oregon and Washington* (Oregon State University Press, 1988), p. 212.

that shrub-steppe was critical habitat in severe winters and offered significant thermal cover in summer. Great Basin wildrye was also found to be important summer habitat. It also noted significant seasonal movement occurred in many of the colored deer throughout the study period.

A 1982 winter census counted 702 mule deer near Rufus Woods Lake. No other animal populations in these upland habitats have been estimated or extensively studied; however, food habits of some species are relatively well known. In early spring mule deer graze on the young shoots of cheatgrass, generally the first plant to green-up in the spring. Mule deer also heavily use green wheat during the fall and spring months as well as during winters with little snow. Later on, and generally throughout the summer, the deer prefer to feed on the young shoots of bitterbrush and to a lesser extent on the various sages and riparian shrubs such as serviceberry and black hawthorn.

It appears from a 1977 study that, during the winter, mule deer may depend on snow eriogonum as a major source of food.<sup>4</sup> A 1983 study discusses the viability of planting snow eriogonum to supplement winter ranges.<sup>5</sup> Mule deer also make use of well-protected areas of shrub-steppe to give birth to their fawns. Small mammals such as sagebrush voles eat primarily green vegetation such as sagebrush. Upland game birds such as ring-necked pheasant, chukar, and California quail eat a variety of seeds, agricultural grasses (wheat, oats, corn) and insects. Furbearers found in the shrub-steppe habitats (bobcat, badger, coyote) are predators, feeding primarily on rodents, as well as bird eggs and carrion. Nuttall's cottontail and marmots eat grasses and herbaceous plants, and in winter may eat bark and twigs of woody plants as well. Both black- and white-tailed hares used to be found in the Chief Joseph Dam area. Black-tailed hares are probably extirpated, while there may still be a remnant population of white-tailed hares. Marmots are restricted to rocky areas where they can find refuge among the many tunnels in the rocks. Black bears are common along the river in August and September, but are in the area year-round.

2.12.2 Riparian Communities. Small streams running down the slopes into Rufus Woods Lake provide good riparian habitats. The term riparian refers to vegetation along lakes, rivers, and tributary streams. The vegetation of these draws generally consists of serviceberry, squaw currant, golden currant, black hawthorn, mountain alder, Wood's rose, Bebb willow, and red-osier dogwood.

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<sup>4</sup> G.C. Burrell, "Bitterbrush in Winter Ecology of the Entiat Mule Deer Herd" (unpublished Master of Science thesis, University of Washington, 1977), 73 pp.

<sup>5</sup> A.R. Tiedemann and C.H. Driver, "Snow Eriogonum: A Native Halfshrub to Revegetate Winter Game Ranges," *Reclamation and Revegetation Research*, 2 (1983): 31-39.

Mock orange, mallow ninebark, oceanspray, chokecherry, smooth sumac, and quaking aspen are less common.

Many of the same animals that utilize shrub-steppe communities also take advantage of the thermal and visual cover provided by the riparian vegetation, as well as the abundant and diverse food source. Mule deer find the shoots of serviceberry especially attractive, and many find the dense vegetation excellent cover for fawning. Upland game birds such as ring-necked pheasant, and California quail harvest the catkins of willows, alders, and birches, and also eat the new buds. Most of the species of non-game birds are found in riparian habitats, where cover and food diversity are greatest. Numerous beavers and some mink have been found, nearly always in association with riparian communities.

Prior to construction of the additional power units and the 10-foot elevation lake rise in February 1981, little riparian vegetation developed along the reservoir. Two principal reasons for this are the daily 6-foot fluctuations in pool elevation due to the flow releases from Grand Coulee Dam, and the dramatic wave action, especially in the afternoons, when high winds are a daily occurrence. Frequent, regular fluctuations in pool changes, combined with coarse-grained soils, prevented the establishment of any moisture regime. The shoreline was as moist as the surrounding uplands and could not support riparian vegetation except in those places where moisture was provided from other sources, such as tributary streams or high ground water. Wave action from winds caused erosion and moved small-grained soils around, in effect preventing seeds from germinating in place. Germinating seeds soon died back from a lack of consistent moisture. Today, daily fluctuations are no more than one foot which allows the development of a moisture regime at the shoreline's edge, providing needed water for growth of riparian species.

2.12.3 Coniferous Trees. Conifers are scarce along most of the shoreline of Rufus Woods Lake. Along the lower (downstream) half of the lake, trees are widely spaced instead of grouped in clusters. In a few areas, ponderosa pines grow in loose stands located on relatively steep hillsides suffused with seeps (see Photo 2-3 below). On north-facing slopes, the pines become more densely packed and are mixed with Douglas firs. The understory plants consist of some of the same species that grow in the riparian communities. Wildlife in those coniferous areas include mule deer, black bear, cougar, porcupine, least chipmunk, yellow pine chipmunk, striped skunk, bushy-tailed woodrat, and deer mouse. Most of these are resident in the conifers, while the larger species, especially mule deer and black bear, utilize other habitats as well. Appendix D contains a full list of plant and animal species and Latin names.

Mule deer find the coniferous areas with dense understory favorable places for fawning, while black bears find these habitats a rich and varied food source. Likewise, the smaller mammals and furbearers such as mink and river otter find thermal cover and a wide variety of foods in coniferous areas. Characteristic birds include goshawk, merlin, blue grouse, great horned owl, hairy woodpecker, western wood pewee, mountain chickadee, red-breasted nuthatch, house wren, golden-crowned kinglet, Cassin's vireo, Townsend's warbler, western tanager, black-headed grosbeak, Cassin's finch, dark-eyed junco, and song sparrow.



**Photo 2-3: Left bank (looking downstream) adjacent to Lone Pine island showing the sparse vegetation and tree spacing. July 1996.**

2.12.4 Wetlands. Wetlands are relatively scarce on Chief Joseph Dam lands. Numerous marshy areas have begun to develop since the pool raise. This wetland system is extremely valuable to many species of wildlife for the food, cover, and water it provides. Passerine birds find this type of habitat to be an oasis in the vastness of shrub-steppe and wheatlands that dominate the region.

Aquatic vegetation in Rufus Woods Lake is not particularly abundant because the rocky shoreline, rapid drop-off in many areas, and the water level fluctuations effectively limits available habitat. A narrow band of aquatic vegetation is present along much of the shoreline of the lake. Five species of aquatic vegetation have been observed in the lake, including elodea, Eurasian watermilfoil, sago pondweed, curly leaf pondweed, and watercress. These species have been observed the entire length of the lake, from RM 591 downstream. The most abundant aquatic plant in the lake is elodea, and



Eurasian watermilfoil is more abundant than sago pondweed and curly leaf pondweed. Eurasian watermilfoil is a nuisance aquatic plant that was introduced into the lake in 1980 or 1981. The present levels of the plant are not causing any significant problems in the lake and do not warrant active management. The population has stabilized, but the Corps will continue to monitor. Watercress can be found sporadically along the reservoir. It has been observed at Coyote Creek, the Nespelem River, and at mitigation sites 7, 16, and 20 (refer to Plate 4-1 for wildlife mitigation site locations).

2.12.5 Snags. The lake was not cleared at the time of the pool raise. The trees that died and became snags are important enough to constitute a habitat in themselves; snags are a valuable source of food for many insectivorous birds and small mammals. They are used by many hole-nesting birds and mammals, and are excellent perches and nest trees for raptors such as bald eagles and red-tailed hawks. Unfortunately, many of the snags are succumbing to bank sloughage or falling due to decay.

2.12.6 Islands. There are several islands in Rufus Woods Lake; two of them were made by the Corps as mitigation to replace goose nest sites lost to the pool raise. Most of the islands are small and are often used by geese for nesting. Buckley Bar at RM 588 is vegetated with bitterbrush and a few juniper trees. It is used by Canada geese and other birds for nesting and by mule deer for fawning.

2.12.7 Cliffs and Banks. Cliffs and banks provide substrate for nesting for several species of birds. Bank and rough-winged swallows and belted kingfishers excavate nest burrows in the softer, silty banks. Barn owls nest in the larger caves of these silty banks. Rocky cliffs provide ledges and caves suitable for nesting by prairie falcons, golden eagles, red-tailed hawks, great horned owls, and other raptors. Rocky outcrops along the reservoir are favored nesting locations by Canada geese, especially those areas where artificial nest sites have been erected.

2.12.8 Summary. None of the communities discussed above are independent. Each community depends on adjacent communities to be viable and healthy. For example, deer need the exposed higher elevations of slopes for their summer habitat but utilize the lowest areas, especially riparian areas, during the winter. Habitats between the summer and winter ranges are necessary to provide deer with food and cover as well as safe migration pathways. Few animals are completely tied to a specific community but rather need the resources provided by a variety of communities to survive through all four seasons of the year. Interdependence of the vegetative communities and the wildlife they support should be considered whenever manipulation of a particular area is proposed.

## **2.13 HUNTING**

Hunting is a popular recreational activity in the vicinity of Rufus Woods Lake. Animals sought include Canada goose, ducks, chukar, gray partridge, ring-necked pheasant, California quail, mourning dove, coyote, and mule deer. Waterfowl hunting is allowed throughout Rufus Woods Lake except within a quarter-mile distance from the operations and security areas around Chief Joseph Dam.

Most of the property along the shores of Rufus Woods Lake is under private, not public, ownership. Hunting on all Colville Indian Reservation land (Okanogan County, north shore), whether owned by the Tribes or privately owned, requires a tribal license. Hunting in Douglas County (south shore) requires licenses and permits from the Washington State Department of Fish and Wildlife (WDFW) and, if on private property, permission from the landowner.

## **2.14 FISH AND FISHERIES**

Opportunities for fish habitat management are limited on Rufus Woods Lake due to the fluctuating pool level and limited Corps fee land along the shoreline. Many of the densely vegetated wildlife mitigation habitat sites provide a direct benefit to fish by minimizing or eliminating overland erosion into the Columbia River. The riparian corridor along Foster Creek by the dam is managed for fish habitat. Trees have been planted to shade the creek, thus reducing the water temperature, and large rocks have been placed within the creek to provide resting and hiding areas for fish.

Former surveys revealed the presence of at least 13 species of fish in Rufus Woods Lake. Collected game species included walleye, whitefish, kokanee, rainbow and brown trout, yellow perch, sturgeon, and burbot. Of the total weight of the fish collected, 43 percent were game species. Of this 43 percent, most were walleye. The non-game species included northern pikeminnow (formerly northern squawfish), peamouth, chiselmouth, carp, and several species of sucker. Two-thirds of the total number of non-game fish taken were northern pikeminnow, suckers, and peamouth. Erickson, et al.,<sup>6</sup> listed several native and non-native fish species for Rufus Woods Lake. Other literature from the BPA, et al.,<sup>7</sup> and other sources, resulted in a list of 38 native and non-native fish species. Refer to Appendix D for the list of fish species.

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<sup>6</sup> Dr. A.W. Erickson, et al., "An Assessment of the Impact on the Wildlife and Fisheries Resource of Rufus Woods Reservoir Expected from the Raising of Chief Joseph Dam from 946 to 956 ft. m.s.l." (report to Colville Tribal Council and U.S. Army Corps of Engineers-Seattle District, University of Washington College of Fisheries, March 1977).

<sup>7</sup> Bonneville Power Administration, U.S. Army Corps of Engineers, and U.S. Bureau of Reclamation, *Columbia River System Operation Review, Final Environmental Impact Statement* (U.S. Dept. of Energy/EIS-0170, Portland, Oregon, 1995), App. K: Resident Fish. Beak Consultants, Inc. and Rensel Associates, "Assessment of Resident Fish in Lake Pateros, Washington" (report to Public Utility Dist. No. 1 of Douglas Co., East Wenatchee, Washington, 1999)

It is probable that some fish which presently inhabit Rufus Woods Lake were produced upstream in Franklin D. Roosevelt Lake. Kokanee spawn at the mouth of the Nespelem River, while walleye, rainbow trout, and eastern brook trout spawn in Rufus Woods Lake. Anadromous fish have no access to Rufus Woods Lake from below Chief Joseph Dam. The dam has no upstream fish passage facilities and is the upstream limit of migration for anadromous fish in the Columbia River. The Colville Confederated Tribes have expressed strong interest in seeing development of anadromous fish passage facilities at Chief Joseph Dam, and later, Grand Coulee Dam. This issue is a matter of regional public policy as well as significant technical challenge, and is being discussed under other forums. While fish passage is outside the scope of the master planning process at this point, land uses associated with it would be suitable for inclusion in future master plan revisions if and when passage is implemented.

Three private commercial fish rearing operations are currently located on Rufus Woods Lake. Two fish farms located in Okanogan County grow sterilized rainbow trout and steelhead trout to the 6- to 8-pound production stage. The third facility is currently non-operational and the permitted time period for construction has expired. In 1999, just over two million pounds of fish were harvested from the operating facilities. Native rainbow trout and escaped net pen rainbow trout from Rufus Woods Lake and Lake Roosevelt exist in Rufus Woods Lake. The fish in the pens are triploid (heat sterilized steelhead), some of which have escaped and some intentionally released into the lake. In the past, Atlantic salmon have also been pen-reared in Rufus Woods Lake. Fisheries personnel at mid-Columbia dams downstream from Chief Joseph Dam have documented juvenile Atlantic salmon in earlier years. Those fish would be net-pen escapees; it is possible, though not clear, that they came from pens in Rufus Woods Lake. However, it is not known if any Atlantics still exist downstream or in Rufus Woods Lake.

Due to the relative inaccessibility, Rufus Woods Lake has received relatively light fishing pressure in the past. Fishing is good in the forebay area for rainbow trout. The Buckley Bar area provides good trout and walleye fishing. Fishing has increased substantially over the last 10 years, with much of this increase attributed to accidental and intentional fish releases from private commercial fish pens. These releases have added significant pressure to fishing on Rufus Woods Lake, particularly in the winter months. Coordination is occurring between the Corps and the Tribes to resolve sanitation problems associated with increased fishing pressure.

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B. Cates, and J. Marco, "Summary of Bypass Operations at Wells Dam" (U.S. Fish and Wildlife Service and Colville Confederated Tribes memorandum to Douglas Co. Public Utilities Dist. R. Klinge, September 1, 1999).

U.S. Army Corps of Engineers, *Annual Fish Passage Report, 1998* (North Pacific Division, Portland and Walla Walla Districts, Portland, Oregon, 1998).

U.S. Geological Survey D.A. Venditti, Cook, Washington, letter to U.S. Army Corps of Engineers-Seattle District J. Laufle, April 19, 2000.

From the confluence of the Okanogan and Columbia rivers, the right bank (north shore, Okanogan County) lies within the Colville Indian Reservation. By formal agreement visitors can fish by boat anywhere within Rufus Woods Lake or this section of Lake Pateros with either a tribal or state fishing license. A tribal license is required to fish from the Okanogan County shoreline, including from the dock at Bridgeport State Park, except that *only* tribal members are allowed to fish from the shore between Chief Joseph Dam and the Columbia River bridge. Only a state license is required to fish from the south, Douglas County shoreline.

## **2.15 THREATENED AND ENDANGERED SPECIES**

A formal breeding bird survey was completed in 1998 on Chief Joseph Dam fee lands and on flowage easement lands where there was wildlife easement. Visual and auditory methods were used for the land surveys; visual methods were used for surveying the water enroute to survey sites. In the summer of 2000, a bat survey was completed on fee and flowage easement lands. The bald eagle is currently the only species on the federal list of threatened and endangered wildlife and plants found in the Chief Joseph Dam area. The bald eagle is listed as threatened in the 48 lower states. In July 1999, the U.S. Fish and Wildlife Service (USFWS) issued a proposed rule to delist the bald eagle in the lower 48 states; the final rule has been delayed due to a moratorium on listing and delisting actions imposed by the former Secretary of the Interior. There is no projected date for finalizing the delisting. It is listed by the WDFW as threatened in Washington State. Approximately 35 bald eagles are observed each winter (October through April) using the snags along Rufus Woods Lake. They feed primarily on chukar, American coots, waterfowl, fish, and carrion. Currently, six successful bald eagle nests are present on Rufus Woods Lake. Part of the wildlife mitigation program is specifically aimed at bald eagles. This includes retaining snags for as long as possible and the erection of 49 raptor poles for perching, five of which are equipped with artificial nesting platforms. Refer to Section 9, Operations: Mitigation, for more information about the wildlife mitigation program. The peregrine falcon was removed from the federal list of threatened and endangered wildlife and plants on August 25, 1999. It is listed by the WDFW as endangered in Washington State. It has been seen on rare occasion flying overhead, but does not appear to nest or winter in the area. Currently, the Corps has no specific peregrine management program, but will continue to monitor for peregrines.

Current coordination is ongoing with the USFWS to develop plans for replacing nest trees for eagles that slough into the water as a result of the 1981 ten-foot pool raise. In addition, the Corps is currently coordinating with local agencies and private landowners to erect replacement nest trees with poles as close to the nest tree as possible but out of harms way. Even if the bald eagle is removed from the federal list of threatened and endangered species, they will continue to be monitored and nest trees added as appropriate. While replacement poles have been placed for eagles, other raptors have been seen using the poles.

Two additional species of birds occur in the area that are state-listed as threatened—the sage grouse and sharp-tailed grouse. Many marginally productive agricultural lands in Douglas County have been taken out of crop production and included in the federal Conservation Reserve Program. This appears to have increased sage grouse habitat and numbers. This population is one of only two known populations in Washington State. Sharp-tailed grouse persist in eight scattered sub-populations, one is located in Douglas County. However, the Douglas County sub-population has experienced a 66 percent reduction in leks from 1954 to 1994, resulting in small isolated populations mostly on private lands. A lek is an area the male establishes to draw a female to him for mating.

A fish survey was completed by the U.S. Geological Survey (USGS) in 2001 on Rufus Woods Lake. Salmon, steelhead trout and char stocks have been listed under the Endangered Species Act of 1973 (PL 93-205) in the Columbia River from the Pacific Ocean to Chief Joseph Dam. Effects of Chief Joseph Dam on these stocks are operational and were addressed in a December 2000 consultation between the Corps of Engineers, the BOR, and the BPA (the Action Agencies) on Section 7 of the Endangered Species Act (ESA). Efforts will continue for many years to carry out the requirements identified by the National Marine Fisheries Service (NMFS) and the USFWS for the Action Agencies to remain in compliance with the ESA. These requirements may result in minor operational and physical changes at Chief Joseph Dam.

In 1997 and 1999, a formal sensitive, threatened and endangered plant survey was completed on fee and flowage easement lands. There are three species of state listed plants found along Rufus Woods Lake—porcupine sedge (*Carex hystricina*), giant helleborine (*Epipactus gigantean*), and (*Ophioglossum pulchellum*).<sup>8</sup> No federally listed or proposed species of plants are in the Chief Joseph Dam area.

A small mammal, reptile, and amphibian survey is contracted for fall 2001 on fee and flowage easement lands.

## **2.16 CULTURAL RESOURCES**

Since the mid-1970's, the Seattle District has sponsored a program at Chief Joseph Dam to identify, test, and recover data from cultural resource sites that could be affected by construction and operations. Testing at about 100 of the prehistoric sites (there are nearly 300 prehistoric and historic sites) identified their age and importance. This supported a formal determination in 1978 that the Rufus Woods Lake Archeological District, which encompasses the entire Chief Joseph Dam project, was eligible for the National Register of Historic Places. The determination of

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<sup>8</sup> Dana Visali, "Sensitive Plant Surveys [on] Rufus Wood[s] Lake" (conducted for the Army Corps of Engineers, June 28, 1999), 2 pp plus tables and photographs.

eligibility provided sufficient federal protection of the cultural resource sites; therefore, it was not necessary to pursue a formal nomination. Between 1978 and 1980, intensive excavation recovered data from 18 prehistoric sites in the archeological district that were to be flooded or otherwise lost to the immediate effects of construction. The program significantly advanced knowledge of regional prehistory through production of over 25 technical reports and compilation of a large, carefully organized collection of artifacts and data. One of the more prominent aspects of the program has been the close coordination and cooperation with the Colville Confederated Tribes, who have maintained a continued intensive involvement through all the program phases. Refer to *Supplement 3 of DM 38: Cultural Resources Operation and Maintenance Management Plan, Chief Joseph Dam, Columbia River, Washington*, developed by the Seattle District Corps of Engineers in February 1987, for detailed information on cultural resource investigations and commitments.

2.16.1 Continuing Responsibilities. The Corps has completed most of the tasks required by a 1979 Memorandum of Agreement with the Advisory Council on Historic Preservation (ACHP) and the Washington State Historic Preservation Officer (SHPO) for raising the pool 10 feet. However, several continuing responsibilities toward cultural resources remain. These responsibilities include curation of materials from the data recovery project; developing and implementing a long-term shoreline monitoring plan (due to the pool raise); developing contingency plans to prevent damage to sites if funding was not available to complete mitigation, and involving the SHPO and the ACHP if funding is not available; setting aside funds to treat sites newly discovered during the monitoring, and developing and implementing plans in consultation with the SHPO; and carrying out Historic American Building Survey/Historic American Engineering Record documentation for certain kinds of properties before demolition.

2.16.2 Curation. The project's archaeological collections are now stored at the CCT curation facility near Nespelem. They are available for further research and for loan for museum displays or traveling exhibits. The Corps retains a continuing responsibility to oversee the program for the collections.

2.16.3 Passive Preservation and Reservoir Monitoring. Several important sites were not excavated since construction or operations would not immediately damage them. These sites were left in place and are observed periodically to discern whether Chief Joseph Dam's operating procedures are damaging them. The lake shoreline also is inspected periodically to remove important artifacts exposed by erosion at other sites and identify sites newly exposed by erosion. Field work for a major total resurvey was completed in 2000. Gravesites are uncovered by bank erosion from time to time and are then relocated by the Corps in coordination with the CCT, or if circumstances

require, they may be protected in place. In recent years, increased shoreline erosion on Buckley Bar exposed gravesites on two separate occasions. After two burial relocations, the Corps applied riprap in 1996 to protect the critical areas of the shoreline. In 1998, after monitoring showed increased threats at passively preserved sites, three areas of shoreline were riprapped to protect housepits in immediate danger of loss.

Because most Corps lands are held by less than fee title estates, a clause was added to the flowage easements for the 10-foot pool raise giving the federal government the right to enter the lands for the purpose of initiating cultural resource investigations and to convey title to any artifacts that might be found. This clause applies to all easements except those located on tribally owned lands. On the lands owned by the Tribes, the Corps is granted entry rights by resolution of the CCT Business Council.

2.16.4 Inventory Before Land Disposal. To comply with federal statute and assure that cultural resources are not inadvertently affected by real estate actions, the Corps reviews land transfers or other disposal actions proposed for fee title lands (or other classes of lands on which it holds cultural resource rights) for their effects on cultural resources. Field inspection may be done if a tract was not inspected during earlier inventory or if the previous inventory is known to be incomplete or otherwise inadequate.

## **2.17 INDIAN TRIBAL USE OF THE AREA**

The Chief Joseph Dam project lies within the historical ancestral home of three member tribes of the Confederated Tribes of the Colville Reservation—the San Poil-Nespelem, the Moses-Columbia, and the Southern Okanogan. At 1.4 million acres (2,100 square miles), it is one of the largest Indian Reservations in Washington State. Tribal enrollment totals over 8,700 descendants of 12 aboriginal tribes: the San Poil, the Nespelem, the Moses-Columbia (Sinkiuse), the Entiat, the Chelan, the Wenatchi (Wenatchee), the southern Okanogan (Sinkaietk), the Colville (Sweelpoo), the Methow, the Palus (Palouse), the Lake (Senijextee), and the Nez Perce of the Chief Joseph Band. Approximately fifty percent of the Confederated Tribes membership live on or adjacent to the reservation. For additional information about the Confederated Tribes of the Colville reservation, refer to their Internet website at [www.colvilletribes.com](http://www.colvilletribes.com).

The entire north half of the Chief Joseph Dam project (right bank, Okanogan County) is within the boundary of the Colville Indian Reservation and includes tribal trust and individual allotment lands administered by the CCT. The CCT have significant governmental jurisdiction within this area; for instance, their Historic Preservation Officer is responsible for administering

Section 106 of the National Preservation Act for federal undertakings on included lands, replacing the Washington State Historic Preservation Officer for those functions.

The south half of the Chief Joseph Dam project (left bank, Douglas County) is on lands ceded in entirety by various Executive and Congressional actions. As the cessions did not reserve rights, the CCT, hence, have no official governmental jurisdiction over those lands.



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## **SECTION 3**

# **FACTORS INFLUENCING RESOURCE USE, DEVELOPMENT, AND MANAGEMENT**

## **SECTION 3 - FACTORS INFLUENCING RESOURCE USE, DEVELOPMENT, AND MANAGEMENT**

### **3.1 GENERAL**

A variety of social, economic, and institutional factors can influence development, use and management of the manmade, natural, and cultural resources of the Chief Joseph Dam and Rufus Woods Lake project. These factors include visitation trends, areas of influence, socioeconomic characteristics, related recreation areas, environmental compliance for cultural and natural resources, coordination with local Indian tribes, and the Americans with Disabilities Act of 1990 (PL 101-336).

### **3.2 PROJECT VISITATION**

3.2.1 Current Visitation. A detailed account of visitation on Chief Joseph Dam lands is provided in Appendix C, Table C-1 (Visitation and Visitor Spending Profile). Generally, visitation has remained relatively constant over the years. Current marketing of Chief Joseph Dam certainly contributes to more visitors stopping before continuing to their destination, but is not quantifiable or easily tied to visitation changes.<sup>1</sup> A focus on increasing visitation to Chief Joseph Dam has enhanced existing visitor facilities (newer restrooms, additional parking lots, and interactive exhibits in the visitor orientation area). A pedestrian-bicycle trail on the right bank and a pedestrian trail in the left bank recreation area draw in the curious visitor. Out-of-area fishing restrictions (closure to specific fish species) make Rufus Woods Lake and Lake Pateros more attractive. Fewer tourists, hence less crowds, around the Chief Joseph Dam area and on Rufus Woods Lake as compared to high-tourist locations also plays a major role in visitation.

3.2.2 Future Visitation Trends. Future trends are difficult to predict due to the unknown impact of increased regional tourism promotional programs, and the influence of public and agency management decisions for the recreation use of Rufus Woods Lake. Employee involvement with the Okanogan County Tourism Council's marketing committee and with the North Central Washington Rural Tourism Network greatly improves publicity at statewide meetings and tourism trade shows. Scenic driving is a major recreation activity in the state of Washington during the summer months and Chief

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<sup>1</sup> Free marketing includes publicity from the local radio stations and newspapers; seasonal prerecorded information about the dam and visitor center airing on an AM radio station; and insertion of event notices in newspapers. Also, the distribution of Chief Joseph Dam brochures in Canada and at the Wenatchee airport. Additionally, maps, listings, and or articles are placed by sponsors of local recreation guides (*Go; Vacationland; North Central Washington's Visitor Guild*), and into the Chelan phone book, Rand McNally Atlas, and in the regional American Automobile Association's *Tourbooks* and *Campbooks*.

Joseph Dam has been featured in three national tourist travel magazines.<sup>2</sup> Area driving offers a pleasant drive through desert country and rolling hills rich in Indian tribal history. Viewpoints around Chief Joseph Dam allow visitors to stop and picnic or to tour the facilities. Visitors are presented with opportunities to study nature, birds and wildlife, hike, walk, and enjoy views of the lake and dam. A maze and labyrinth at the visitor orientation area (see Section 6.4, Visitor Orientation Area, for more information) discuss the importance between salmon and tribal needs, and provides information on what can be done to increase wild salmon populations. Annual events, such as Bridgeport Daze, may gain in popularity and increase local tourism. For the boater, limited launching access to Rufus Woods Lake is a benefit as discussed below in Section 3.3.2, External Factors.

### **3.3 FACTORS INFLUENCING VISITATION**

3.3.1 Internal Factors. Examples of internal visitation factors that the Corps of Engineers may have influence over include facility changes (such as the site improvements mentioned in Section 3.2.1 above and throughout Section 3), advertising (like the tourism promotions referred to in Section 3.2.2 above), and agency regulations and policy (it is Corps' policy to encourage non-federal participation for new developments and administration as described in Section 12.2.1, Future Design Recommendations). Currently, there are no known benefactors for developments at Chief Joseph Dam.

3.3.2 External Factors. Visitation factors the Corps has no control over, but may be a compliment to, include those recreational facilities and opportunities available outside the local vicinity. Rufus Woods Lake does not compete with larger developed recreation areas due to its distance from metropolitan cities and its limited access to the lake—much of the shoreline is privately owned or has topography that precludes access. Rufus Woods Lake offers the boater a more secluded, private and quiet experience with scenic views unencumbered by dense housing, loud noises, and too many lake users. Mental and physical relaxation is the benefit. Amenities are not overburdened with waiting tourists. Upstream from the dam, the lake offers only one highly developed day and overnight recreation area to travelers—Bridgeport State Park. Immediately downstream from the dam is one developed day and overnight facility—Bridgeport's Marina Park, which includes hook-ups for recreational vehicles. The closest motels are in the towns of Brewster and Pateros, 12 road miles north and 19 miles west of the dam, respectively. The towns of Grand Coulee, 38 miles to the east, and Chelan, 36 miles to the west, are major tourist towns

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<sup>2</sup> Washington State Tourism Office, *Getaway Guide, Spring-Summer 1999* (insert in *Sunset* and *Northwest Travel* magazines, March 1999).  
Okanogan County Tourism Council, (unnamed article in *RV Life*, August 2000).

attributable to Grand Coulee Dam and Lake Chelan, respectively. Both areas offer more transportation facilities (airports, car rentals), accommodations (motels and developed camping facilities), and general tourist attractions (water recreation, the dam, shopping, eateries, amusements). Section 3.5 lists the major recreation facilities in the Okanogan and Douglas County areas.

Another external factor is the location of Chief Joseph Dam and Rufus Woods Lake in relation to the major metropolitan areas. Located in north central Washington, state residents can access this area within a reasonable period of time—a two- to four-hour drive. However, the dam and lake may not be a destination for these tourists but rather a stopping point en route to other areas in Washington, Idaho, Oregon, and British Columbia. According to the spring-summer 1990 visitor survey, Washington residents accounted for 71 percent of the total visitors recreating at the dam and on the lake (of this, 28 percent were from Douglas County; 19 percent from Okanogan County). During the fall-winter off-season, 83 percent of the total visitors were, again, Washington residents (65 percent from Douglas County; 16 percent from Okanogan County). Few visitors travel over the Cascade Mountain Range and from neighboring counties to specifically recreate at Chief Joseph Dam, probably due to the wide variety of recreational opportunities offered in their own counties, and the limited access and amenities around Rufus Woods Lake. Visitation from all market areas fluctuate seasonally and in response to tourism trends that are influenced by economic and weather conditions, road conditions, and road construction.

A third factor is the visitor's demand for a variety of recreational opportunities. According to the 1995 Washington *Statewide Comprehensive Outdoor Recreation Planning (SCORP)* program,<sup>3</sup> the most popular activity category is sightseeing, picnicking, and operating a motorized vehicle on the road for pleasure. People closer to home want to jog, walk, take photographs, sightsee, visit the beach, bicycle, and swim. Activities participated in by visitors to Chief Joseph Dam and Rufus Woods Lake are displayed in Table C-2, Visitor Activity Profile, of Appendix C.

The developed upper Columbia River is the factor most influencing water-based recreation opportunities in this region. The upper Columbia River has a good balance of recreational opportunities that are provided by several federal, tribal, state, and local agencies. However, growing demands for recreation opportunities continually tax the present system, especially in the

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<sup>3</sup> Most of the statistics cited in this chapter are from *Washington Outdoors: Assessment and Policy Plan 1990-1995*, Interagency Committee for Outdoor Recreation (Tumwater, Washington, April 1990), 94 pp.; and the *State of Washington Outdoor Recreation and Habitat: Assessment and Policy Plan 1995-2001* (Olympia, Washington, November 1995), 39 pp. Each plan is an element of the Washington Statewide Comprehensive Outdoor Recreation Planning (SCORP) program.

most popular areas. The desire to camp, boat, day hike, swim at a beach, and picnic will increase in Washington State at a rate the population increases. Efforts taken by public and private sectors to offer recreational amenities can alleviate pressure at the most popular areas. Especially crucial is the need for public access to the water, trails, natural areas, and fish and wildlife habitat. At Chief Joseph Dam, areas being upgraded include the addition of picnic tables and trails through natural areas. Fish and wildlife habitat are already high priorities, and accessibility to the water for boats and shore anglers is already provided.

Tourism is a basic industry and an important factor to the economies. Information about recreational opportunities should consider marketing relationships—other facilities, counties, and destinations. Good maps and proper signage is very important to visitors unfamiliar with their destinations. The increase in recreational demand by users is transitioning agencies to collaborate with the public for their desires while finding ways to use existing resources more efficiently. Water quality is important for water-dependent activities as pollution results in economic damage associated with lost recreation opportunities on streams and lakes. As maintenance dollars shrink, opportunities can be lost. Wise stewardship of the public's natural resources, coupled with public input, is vital for future generations.

### **3.4 SOCIOECONOMIC CHARACTERISTICS**

3.4.1 Trip Spending. The Washington *SCORP* reports that state travel spending has grown 4.7 percent annually, almost twice as fast as inflation. In 1998, out-of-state visitors made up the largest portion of total travel expenditures (61.5 percent). Washington residents expend less due to their higher proportion of day trips. Of all visitors (in-state residents and out-of-state visitors), the largest portion of expenditures (46.6 percent) were made by visitors staying in commercial accommodations as opposed to public campgrounds. Although day travelers do not need overnight accommodations, they still contribute to the state and local economies in travel expenditures. All travelers indirectly contribute to local and state governments as their spending dollars generate local and state tax revenues through the purchasing of goods and services. Refer to Appendix C, Table C-1, Visitation and Visitor Spending Profile, for detailed statistics.

3.4.2 Effects of Population on Recreation. As the population of Washington increases, demand for recreation opportunities increase. Between 1989 and 2000, the population increased 22 percent (from 4,710,666 to 5,757,400). The *SCORP* reports the baby-boom generation (those born between 1946 and 1964) was heavily socialized into outdoor recreation behavior, so their demand will increase for opportunities, such as trail activities, passive

recreation, and nature appreciation. Today's recreationists demand quality—three-week destination vacations are being replaced with more frequent, but shorter, mini-vacations. More close-to-home opportunities for single people and single parents will be required. Washington State residents are retiring earlier and they want quality recreation opportunities. Refer to Appendix C for more discussion on growth in activities.

#### 3.4.3 Problems Associated with Recreational Settings.

- a. Much of central Washington's economy is dependent on agriculture (farms, orchards, and ranches). The Columbia-Snake Rivers provide low cost power and water for irrigation and transportation of agricultural commodities. Additionally, the region's location relative to Pacific Rim countries provides a market for Pacific Northwest agricultural and food products. Rural areas, such as the Chief Joseph Dam locality, also offer scenic and outdoor recreational opportunities. Visitors spend the greatest portion of their travel dollars on food and beverage and group transportation, particularly motor fuel. Tourism and recreation industries are increasing which may lead to conflicts as public recreational uses become incompatible with agribusiness.
- b. The 1995 *SCORP* reports the public wants facilities in settings that include water access more than any other type of setting. Most Chief Joseph Dam project lands are along the edges of rivers, shorelines, and wetlands; however, much of the land is privately owned. Only a limited number of boat ramps allow public access to Rufus Woods Lake due to the topography and large amount of private land along the Douglas County shoreline and along Colville Indian Reservation land on the Okanogan County shoreline. Although boaters are frequently content to use non-developed or less improved sites, and boaters usually picnic in their boat, most dispersed sites lack boat and lake access, drinking water, and sanitation facilities. Boaters often pull onto any sandy spot upstream from the dam that is smooth enough to stop, resulting in sanitation problems on Corps and CCT lands and on private property. It also creates a liability concern with private landowners should anything happen to a visitor while unknowingly on their private property. The state of Washington seeks to provide access to publicly-owned recreation and habitat lands in order to reduce demand for access to private land. Yet, the state also encourages willing owners to allow public use of their property. Washington's liability act (RCW 4.24.200, 210) substantially reduces the landowner's duty to the gratuitous recreation user.

c. Boating, independent of fishing, is a combination of high-speed ski boating, personal watercraft use, slow-tour boating, sailing and canoeing. Rufus Woods Lake's potential as a pleasure boating resource is may be limited by the lake's distance from major population centers which creates long boat and trailer hauling distances. No boating facilities currently exist on the lake itself for rentals, repairs, or gas sales, but local businesses advertise and provide boat rentals specifically for use on Rufus Woods Lake. The Corps will replace three permitted community boat floats that are no longer on the lake.

d. Swimming is important to the residents of the area. Bridgeport State Park provides a protected inlet and beach which offers safer and warmer swimming than does the open Rufus Woods Lake upstream from the dam or Lake Pateros downstream. Local residents have been using a pond that forms in the Corps' big hole quarry site. Due to sanitation and safety concerns, the Corps will regulate access to the public. Refer to Section 5.9 Big Hole Quarry, for more information about this area.

3.4.4 Management Challenges. Integrating the needs of many users is challenging to public and private sector land managers. More recreationists pursuing a greater variety of activities will use the same resource base. Much of the expanded demand will require more access to water, trails, and open spaces. Settings perceived as more primitive and natural, and those which are close to where people live, need to be identified and preserved. Increased conflict, resource degradation, and changing recreation experiences are probable outcomes of expanded recreation that is unplanned and or unmanaged. Current resources need to be optimized and new resources need to be committed.

### **3.5 RELATED RECREATION AREAS**

Recreation areas and opportunities abound in Washington State, including a number of wilderness and state recreation areas and parks to enjoy. Although Chief Joseph Dam is not located within a national forest, there are several forests, wilderness, and national recreation areas easily accessible. These include Kaniksu, Okanogan, Colville, and Wenatchee National Forests; Salmo-Priest Wilderness, Pasayten Wilderness, Lake Chelan-Sawtooth Wilderness and Glacier Peak Wilderness; Lake Chelan and Lake Roosevelt National Recreation Areas. Other popular tourist sites in central and north central Washington include Banks Lake, Sun Lakes, Moses Lake and Potholes Reservoir. In nearby Idaho, major recreation areas include Priest Lake, Lake Pend Oreille and Lake Coeur d'Alene. Areas closest to Chief Joseph Dam are listed below.

3.5.1 High Density Recreation Use Areas. High-density recreation is day or overnight use in a developed area designed for intensive recreational activities by the visiting public. The four areas listed below are within 25 miles of Chief Joseph Dam.

- a. Alta Lake State Park. This facility is approximately 23 miles northwest of Chief Joseph Dam. It offers 180 campsites (32 with hook-ups), 9 group campsites, a trailer dump station, 20 picnic sites, 2 kitchen shelters, 3 comfort stations, a boat dock and 2 ramps, a beach and swim area with a bathhouse, a short hiking trail, and on-site rangers. During the winter the park is open for snowmobiling and cross-country skiing. Nearby Alta Lake Golf Course is privately owned and opened to the public.
- b. Lake Pateros. This lake is the reservoir formed behind Wells Dam and continues upstream to Chief Joseph Dam. The lake is host to three marinas relatively close to Chief Joseph Dam: Pateros Boat Landing, Columbia Cove Park in Brewster, both discussed below, and Marina Park in Bridgeport, discussed in Section 3.5.1c.

The city of Pateros is located at the confluence of the Methow and Columbia Rivers, 19 miles west from Bridgeport. Pateros Boat Landing includes a boat ramp, dock and seasonal fish cleaning station, parking, picnic tables, drinking water, public restroom, and a walking trail. City amenities include a swimming park on the Methow River, a memorial park on Lake Pateros with picnic facilities, and lighted walkways along the lake—all maintained by the city. Pateros is also host to lodging, dining, and shopping facilities, tennis courts, fruit stands, golf, horseback riding, and local festivals. During the winter this area offers snowmobiling and cross-country skiing.

The city of Brewster is located on Lake Pateros, 12 miles north from Bridgeport. Columbia Cove Park includes a parking lot and public restrooms, a boat ramp between two boat docks, swim area and beach, basketball court and playground, picnic area and shelter, and lawn—all adjacent to the city community pool and campground.

- c. Marina Park. Located in and maintained by the city of Bridgeport, downstream from Chief Joseph Dam on Lake Pateros, is a small but developed day use and overnight facility accommodating recreation vehicles. The park includes restrooms and showers, paved parking for vehicles with boat trailers, two boat ramps of which one is maintained by the Corps of Engineers (discussed in Section 6.6.1, Downstream Boat Ramp), boat moorage docks, fish cleaning station, a sandy beach



with swim area, kids play area, and a picnic shelter, all in a landscaped environment. A portion of this land is under lease to Bridgeport by the Corps of Engineers (refer to Section 6.6, Downstream Boat Ramp, for specific details).

d. Bridgeport State Park. Operated by the Washington State Parks and Recreation Commission, this day use and overnight facility is just upstream from Chief Joseph Dam on the right bank (north shore). A thorough description is provided in Section 6.2, Bridgeport State Park.

**3.5.2 Low Density or Dispersed Recreation Use Areas.** Low density and dispersed recreation is defined as day use or impromptu camping along or near county roads or on Rufus Woods Lake in areas that are accessible only by boat. Minimal or no facilities are provided in these areas.

Other than the Corps' dispersed use areas on Rufus Woods Lake and the Seaton's Grove boat ramp at RM 590, the nearest related low density use area is Omak Lake. This lake is located on Colville Reservation lands about 45 miles north of Chief Joseph Dam. The west side of the lake is open to the public. Facilities include only a primitive boat ramp. Swimming is popular in spite of aquatic vegetation growth. Anglers are required to have a tribal fishing license as described in Section 2.14, Fish and Fisheries.

### **3.6 ENVIRONMENTAL COMPLIANCE**

Civil works projects operated by the Corps of Engineers, such as Chief Joseph Dam, must comply with environmental laws, executive orders, and regulations. *The Environmental Assessment and Management (TEAM) Guide* is the Corps manual to guide compliance requirements. In 1995, an environmental compliance assessment was conducted at Chief Joseph Dam as a requirement of *TEAM Guide*. The most recent environmental compliance assessment was completed in spring of 2000. As a land use management document, activities cited in this master plan are subject to the environmental laws described below. A list of publications satisfying these laws is provided at the end of Appendix C.

**3.6.1 NEPA.** The National Environmental Policy Act of 1969, as amended (PL 91-190), requires federal agencies to study and consider the environmental impacts of their proposed actions. Consideration begins in the planning stages and continues through design, construction, and operation of the project. A final EIS for the additional units 17-27 was published August 1971<sup>4</sup> with a final supplement for operation and maintenance (O&M)

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<sup>4</sup> U.S. Army Corps of Engineers, *Chief Joseph Dam Additional Units Final Environmental Impact Statement* (Seattle District, August 1971).

published February 1975.<sup>5</sup> It was prepared pursuant to the *Council on Environmental Quality Regulations* (40 Code of Federal Regulations (CFR), parts 1500-1508) and the *Corps of Engineers' Procedures for Implementing NEPA* (33 CFR, parts 230 and 325).

The supplement was prepared for a pool raise and addressed Chief Joseph Dam project features and impacts broadly, including recreation and natural and cultural resources. The document, in compliance with NEPA, was distributed for public and agency comment. It covered master plan features generally, such as indicating recreation is and will continue to be an incidental purpose of the Chief Joseph Dam project. Section 1.3.14 of the document states a major recreation area and several remote camping areas accessible by boat will be constructed at points along Rufus Woods Lake. Specific proposed master plan actions would need to be considered for further NEPA compliance before their implementation.

3.6.2 ESA. Section 7 of the Endangered Species Act of 1973, as amended (PL 93-205), requires federal agencies to ensure their actions do not jeopardize threatened or endangered species or their critical habitat. Consultations with the USFWS, the NMFS, the WDFW, the CCT and others ensure that such species and their critical habitats are conserved. Information about threatened and endangered species around Chief Joseph Dam can be found under Section 2.15 of this master plan.

3.6.3 Clean Water Act. Provisions of the Clean Water Act (PL 92-500), as amended (PL 95-217), are implemented through various agencies. The Corps is responsible for Section 404 relating to discharge of dredged or fill material into waters of the United States. This master plan for Chief Joseph Dam does not propose actions that require permitting under Section 404, nor does the Corps issue permits to itself in any case. Other provisions of the Act are implemented by the Washington State Department of Ecology, the agency that sets state water quality standards. All federal actions must conform to the applicable state regulations and standards for use.

3.6.4 NHPA. The National Historic Preservation Act (1966, amended 1980; PL 89-665) requires federal agencies to consider the effect of their actions on historic properties and to afford the ACHP an opportunity to comment. Compliance requirements for cultural resources are derived from Sections 106 and 110. Compliance includes the steps below.

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<sup>5</sup> U.S. Army Corps of Engineers, *Final Supplement to Environmental Statement, Chief Joseph Dam Additional Units, Operation and Maintenance* (Seattle District, February 1975).

- a. Inventory (survey) to identify sites that may be eligible for the *National Register of Historic Places*;
- b. Evaluate identified sites for National Register eligibility and determine the effects of the agency action on them; and
- c. Treat adverse effects on eligible sites, including measures for stabilization or data recovery; curation of recovered archaeological collections; and consultation with affected Indian tribes throughout this process. Further information about Chief Joseph Dam's culture resources can be found under Section 2.16 in this master plan.

Many years have passed since Chief Joseph Dam conducted a comprehensive inventory. Field work for a major total resurvey was completed in 2000. The existing *Historic Properties Management Plan* (HPMP) has expired, but is being updated to address the results of the new inventory. Completion is scheduled for 2002. Specific guidance on the content and format of the plan is presented in EP 1130-2-540.

3.6.5 NAGPRA. The Native American Grave Protection and Repatriation Act (1990; PL 101-877) requires the Corps to inventory human remains and associated funerary objects and to develop written summaries for unassociated funerary objects, sacred objects, and objects of cultural patrimony in archaeological collections from the project. The Corps also must identify likely lineal descendants of groups to whom the objects or remains belonged, notify those groups, and afford them an opportunity to reclaim the objects or remains. The law also governs how the Corps handles disturbance of graves and other cultural items by scientific excavation, grave relocation, or construction and requires consultation with the CCT before such disturbance. It also requires the Corps to have procedures in place to deal with inadvertent discoveries of graves or NAGPRA-eligible objects.

3.6.6 ARPA. The Archaeological Resources Protection Act of 1979 (PL 96-95) provides for the protection of archaeological resources located on Chief Joseph Dam fee lands. It sets up permit requirements for the excavation or removal of archaeological resources from the fee lands. The ARPA established civil and criminal penalties, including forfeiture of vehicles and equipment used, fines of up to \$100,000 and imprisonment up to five years for second violations for the unauthorized appropriation, alteration, exchange, or other handling of archaeological resources.

### **3.7 AMERICANS WITH DISABILITIES ACT**

On July 26, 1990, the Americans with Disabilities Act (ADA; PL 101-336) became law. It extends the principles of Section 504 of the Rehabilitation Act of 1973 (PL 93-112, as amended) and requires many federal departments and agencies to develop implementation regulations that prohibit discrimination based on disability. Regulations include compliance with design and construction standards as expressed in the *ADA Accessibility Guidelines for Building and Facilities* (ADAAG, 1991). A memorandum signed by the Secretary of Defense on October 20, 1993, titled, "Access for People with Disabilities," changed the U.S. Department of Defense (DOD) policy by directing the DOD to meet not only the *Uniform Federal Accessibility Standards* (UFAS), but also to meet the requirements of the accessibility guidelines in facilities subject to the federal standards whenever the accessibility guidelines provide equal or greater accessibility than the federal standards. Implementation of the accessibility standards at Chief Joseph Dam is detailed in Section 11.2 of this plan.

### **3.8 COORDINATION WITH INDIAN TRIBAL GOVERNMENTS**

Executive Order 13175, "Consultation And Coordination With Indian Tribal Governments," dated November 6, 2000, requires federal agencies to work closer with affected tribal governments. Corps of Engineers environmental technical staff are in routine contact with the Colville Confederated Tribes. Coordination and consultation with the Tribes regarding this master plan is described below in Section 3.9. Chief Joseph Dam and Seattle District cultural resource staff meet quarterly with the CCT History and Archaeology Department and other staff to discuss cultural resources management at Chief Joseph Dam, and to coordinate plans and activities, including development and implementation of the master plan. The cooperating group meetings also provide a venue to schedule other meetings between Corps of Engineers district commanders and elected Tribal officials to consult on matters of policy and trust relations between the Corps and the Tribes.

### **3.9 PUBLIC COORDINATION OF MASTER PLAN**

Tribal, agency, and public coordination of this master plan occurred throughout the planning process. In January 1999, Corps of Engineers staff met with the Colville Confederated Tribes Business Council to discuss master plan revisions. Two public meetings were held on February 2 at the Chief Joseph Dam project office. The Corps briefed tribal resource department members and tribal members in general during February and March to request their input. In June 1999, Chief Joseph Dam staff conducted a boat tour of Rufus Woods Lake for tribal members to view lands administered by the Corps. Coordination with agencies and the public included news releases and comment sheets announcing the start of the master plan. Comments from the Tribes, other agencies and the public, as well as responses by the Corps, are provided in Appendix F. Final review of this plan by the CCT, agencies, and the public was conducted in September 2001. Distribution lists are in Appendix E.

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## **SECTION 4**

# **LAND ALLOCATION AND CLASSIFICATIONS**

## SECTION 4 - LAND ALLOCATION AND CLASSIFICATIONS

### 4.1. GENERAL

The purpose of Section 4 is to define and identify land allocations, land classifications, and restricted water use zones for lands administered by the Corps of Engineers.

### 4.2 LAND ALLOCATION

Lands administered by the Corps of Engineers are allocated to one of four categories depending on the authorized purpose for which they were acquired. Chapter 3 of EP 1130-2-550 defines these categories as Operations, Recreation, Fish and Wildlife, and Mitigation. All Chief Joseph Dam lands above and below full pool are allocated to Operations. Inclusive are fee lands (1,687.83 acres), public domain lands (2,424.52 acres), and easement lands (12,006.70 acres). *Note: Land classification fee acreage presented in this master plan are approximate and constitute only the land above full pool on August 12, 1993, when the aerial photographs were taken. However, total realty interests (16,123.90 acres of fee, easement, public domain, and other lesser interests) acquired by the Corps also includes those lands below elevation 955 feet, for example, those lands that historically extended to the high ordinary water level of the Columbia River in 1945.*

### 4.3 LAND USE CLASSIFICATIONS

Allocated lands are broken down further into classifications to provide for development and resource management consistent with authorized purposes and the provisions of the National Environmental Policy Act of 1969, as well as other federal laws. Engineer Pamphlet 1130-2-550 land classification categories include Project Operations, Recreation, Mitigation, Environmentally Sensitive Areas, Multiple Resource Management, and Easement Lands. In addition to fee land, withdrawn public domain land, and easement land, the Corps holds 2.44 acres of leased land and 2.41 acres in permits.

Table 4-1, following Section 4.4 below, summarizes the land classification acreage for each area. Plate 4-1 maps the land classification areas for the entire reservoir. Plate 4-2 supplies further detail in the vicinity of the dam. Descriptions of each land classification are described below. Appendix B, Real Estates Interests, provides additional real estate information.

**4.3.1 Project Operations.** Lands that are needed for the daily operation of the dam and lake are classified as Project Operations lands. At Chief Joseph Dam, these lands are used for hydropower structures; administration offices; maintenance, storage and security buildings; a rock quarry; an embankment

slide area; and a stream gaging station. Although the visitor center and group picnic shelter are located within the boundary of this classification, hydropower production takes precedence over the other land uses. Section 5 Operations: Project Operations, provides a full discussion of these lands totaling 266.17 acres.

4.3.2 Recreation. These lands are managed for intensive recreational activities by the visiting public, including developed recreation areas and areas for concessions, resorts and quasi-public development. No hunting or agricultural uses are permitted on this land. Seven areas are classified as recreation at Chief Joseph Dam and include the right bank fishing area, the visitor orientation area, three viewpoints, and the downstream boat ramp. Bridgeport State Park, which includes Lake Woods Golf Course, is also classified as recreation and is managed by the Washington State Parks and Recreation Commission and Lake Woods Golf Club, respectively. Section 6, Operations: Recreation, describes those lands classified under recreation totaling 318.18 acres (283.15 acres are leased to Washington State Parks).

4.3.3 Multiple Resource Management (MRM). Lands under this classification may be managed for one or more uses but with compatibility to the primary land allocation. Use may include low density recreation, inactive/future recreation areas, fish and wildlife management, and or vegetative management. Chief Joseph Dam MRM lands total 569.1 acres and are managed according to the following sub-classifications. Section 7, Operations: Multiple Resource Management, more fully describes these lands.

- a. Recreation – Low Density. These lands, totaling 88.1 acres, are being managed for activities such as hiking, primitive camping, wildlife observation, hunting, and other similar low density recreational use.
- b. Vegetation and Wildlife Management. Management of activities on these lands, totaling 481 acres, focuses on protecting and developing vegetative cover that is free of noxious weeds. This results in an increase in value to wildlife.

4.3.4 Environmentally Sensitive Areas. These lands are described as areas where scientific, ecological, cultural or aesthetic features have been identified. Management is restricted to actions that do not conflict with the preservation of significant resources. One area, the Nespelem site totaling 37.6 acres, falls under this classification. A discussion of this area is found in Section 8, Operations: Environmentally Sensitive Areas.

**4.3.5 Mitigation Lands.** These are lands acquired or designated for mitigation to offset losses associated with development of the dam and lake. At Chief Joseph Dam, 20 mitigation lands were examined with 16 final sites established as a result of the impact of the 1981 ten-foot pool raise. The 16 wildlife mitigation sites under this classification total 2,753.29 acres above and below full pool. Section 9, Operations: Mitigation, details each of these sites. Mitigation lands include fee lands (121.85 acres), non-fee public domain lands (962.42 acres), and non-fee flowage easement lands (1,669.02 acres which are also listed as mitigation lands).

**4.3.6 Easement Lands.** These are lands in which the Corps holds an easement interest but not fee title. Use and management is in strict accordance with the terms and conditions of the easement agreement. The majority of easement lands around Chief Joseph Dam are used for flowage or inundation; the rest primarily for road and utility rights-of-way. Culturally sensitive sites are also located on these lands. Refer to Section 10, Operations: Easement Lands, for a discussion on easement land which totals 12,006.70 acres above and below full pool and includes the 1,669.02 mitigation acres.

#### **4.4 RESTRICTED WATER USE ZONES**

River areas immediately upstream and downstream from the dam are normally considered hazardous zones. At Chief Joseph Dam, two restricted water use zones have been designated in which public access is restricted due to public safety and security considerations. The area immediately upstream from the dam is bound by a log boom across Rufus Woods Lake (see Plate 4-2 and Photo 7-1). The boom prevents boaters from entering the upstream restricted zone as well as diverts woody debris to the left bank debris collection area. Swimming is prohibited in this zone.

The downstream restricted water use zone extends from the spillway to about 500 feet downstream from Foster Creek at about RM 544.6. Public access for fishing within this zone on the right bank only is restricted to the local Indian tribes. Boating is prohibited within the entire zone.

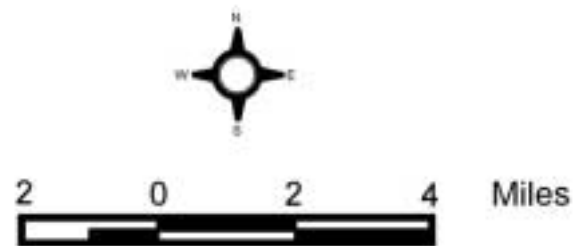
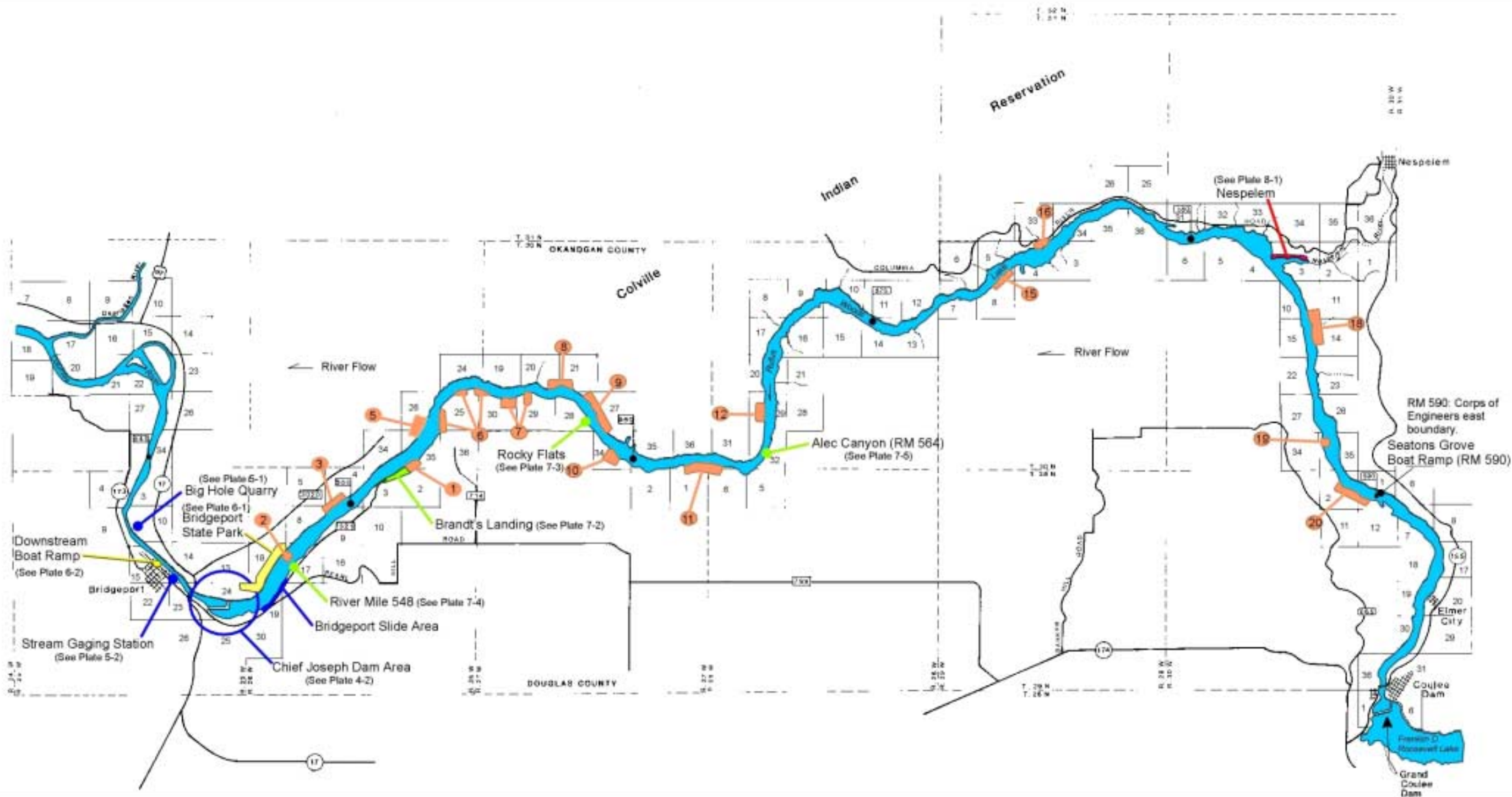


**Photo 4-1: Signage warning boaters of the restricted water use zone.**



	CHIEF JOSEPH DAM LAND CLASSIFICATIONS (fee acres) <sup>1</sup>				
SITE	OPERATIONS Project Operations	OPERATIONS Recreation	OPERATIONS Multiple Resource Mgt	OPERATIONS Environmental Sensitive Areas	OPERATIONS Mitigation
Wildlife Mit O&M Facility	1.20				
Left Bank Storage Area	20.70				
Left Bank Operations Area	81.20				
Right Bank Staging Area	4.60				
Columbia River Br. (SR17)	8.70				
Bridgeport Slide Area	50.10				
Big Hole Quarry	99.10				
Downstream Gage Station	0.57				
Bridgeport State Park		283.15 <sup>2</sup>			
Right Bank Fishing Area		12.30			
Visitor Orientation Area		16.10			
South Viewpoint		1.70			
North Viewpoint		1.90			
Spillway Viewpoint		2.20			
Downstream Boat Ramp		0.83			
Left Bank Recreation Area			57.10		
Brandt's Landing			22.40		
Rocky Flats			8.60		
Lf Bank Wildlife Mgt Area			133.30		
Rt Bank Wildlife Mgt Area			330.20		
River Mile 548			7.50		
RM 564: Alec Canyon			10.00		
Nespelem				37.60	
16 Wildlife Mitigation Sites					36.15 <sup>3</sup>
<b>Total Fee Acres: 1,227.20<sup>1</sup></b>	<b>266.17</b>	<b>318.18</b>	<b>569.10</b>	<b>37.60</b>	<b>36.15<sup>3</sup></b>
<sup>1</sup> Acreage is approximate and constitutes only land above full pool on August 12, 1993, when the aerial photographs were flown. Total fee title acres above <i>and</i> below full pool is 1,687.83. Acreage is also applicable to those lands above tailwater elev. 787.7 ft (113,200 cfs, and Lake Pateros at elev. 779 ft) for sites downstream from Chief Joseph Dam. <sup>2</sup> Bridgeport State Park includes 283.15 Corps fee acres leased to the Washington State Parks and Recreation Commission. The state owns an additional 434.1 acres for a total of 717.25 acres. Of the 283.15 acres, the state subleases 80 acres to the Lake Woods Golf Club. <sup>3</sup> <b>OPERATIONS Mitigation</b> classification totals 2,753.29 wildlife mitigation acres above and below full pool. It includes 16 sites consisting of 121.85 fee acres (of which 36.15 acres are above full pool), 962.42 non-fee public domain land acres, and 1,669.02 non-fee flowage easement/mitigation acres. See Section 9 for a description of wildlife mitigation sites.					
Other Land Classifications (non-fee lands): <b>OPERATIONS Easement</b> classification totals 12,006.70 flowage and miscellaneous easement acres above and below full pool. The 1,669.02 flowage easement/mitigation acres is part of this total. See Section 10 for a description of easement lands. <b>Public domain (PD) land</b> totals 2,424.52 non-fee acres above and below full pool (of this, 1,691.88 acres are above full pool—refer to Table 9-2). PD land includes the 962.42 non-fee mitigation acres mentioned in footnote 3 and 1,462.10 acres not actively managed by the Corps. PD land is administered by the BLM that has been withdrawn for use by the Corps of Engineers in connection with the operation of Chief Joseph Dam. <b>Leased land and permits</b> include 2.44 leased acres and 2.41 Held by Permit acres. See Appendix B acreage chart for more information.					

**Table 4-1: Land classification acreage for Chief Joseph Dam project lands.**



- Project Operations
- Recreation
- Multiple Resource Management
- Mitigation (Wildlife Mitigation Sites)
- Environmentally Sensitive Areas
- Public Domain Lands (see Plate B-1)

## Chief Joseph Dam Master Plan



### LAND CLASSIFICATION

US Army Corps  
of Engineers  
Seattle District

Plate 4-1

JLG 06/28/00





**US Army Corps  
of Engineers.**  
Seattle District

### Plate 4-2

DFF 08/23/00



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## **SECTION 5**

### **OPERATIONS: PROJECT OPERATIONS**

## **SECTION 5 - OPERATIONS: PROJECT OPERATIONS**

### **5.1. GENERAL**

Section 5 describes and analyzes Operations lands and associated facilities and structures required for daily O&M of Chief Joseph Dam in accordance with its authorized purposes. Such lands at Chief Joseph Dam are classified Project Operations for the primary purpose of providing hydropower.

This section includes a brief description of each management area, its resource objectives and rationale, development and management actions, and identification of major constraints to its current or future resource use, development, and management.

It is not the purpose of this master plan to recommend objectives or actions for the daily operation of the dam. Instead, the focus of the objectives and actions listed is on land and facilities use with regards to natural and cultural resources impacts. A number of other reference documents are used by Chief Joseph Dam personnel to conduct daily O&M, including physical security and emergency plans, O&M manuals and inspection reports, and safety and health requirements manuals.

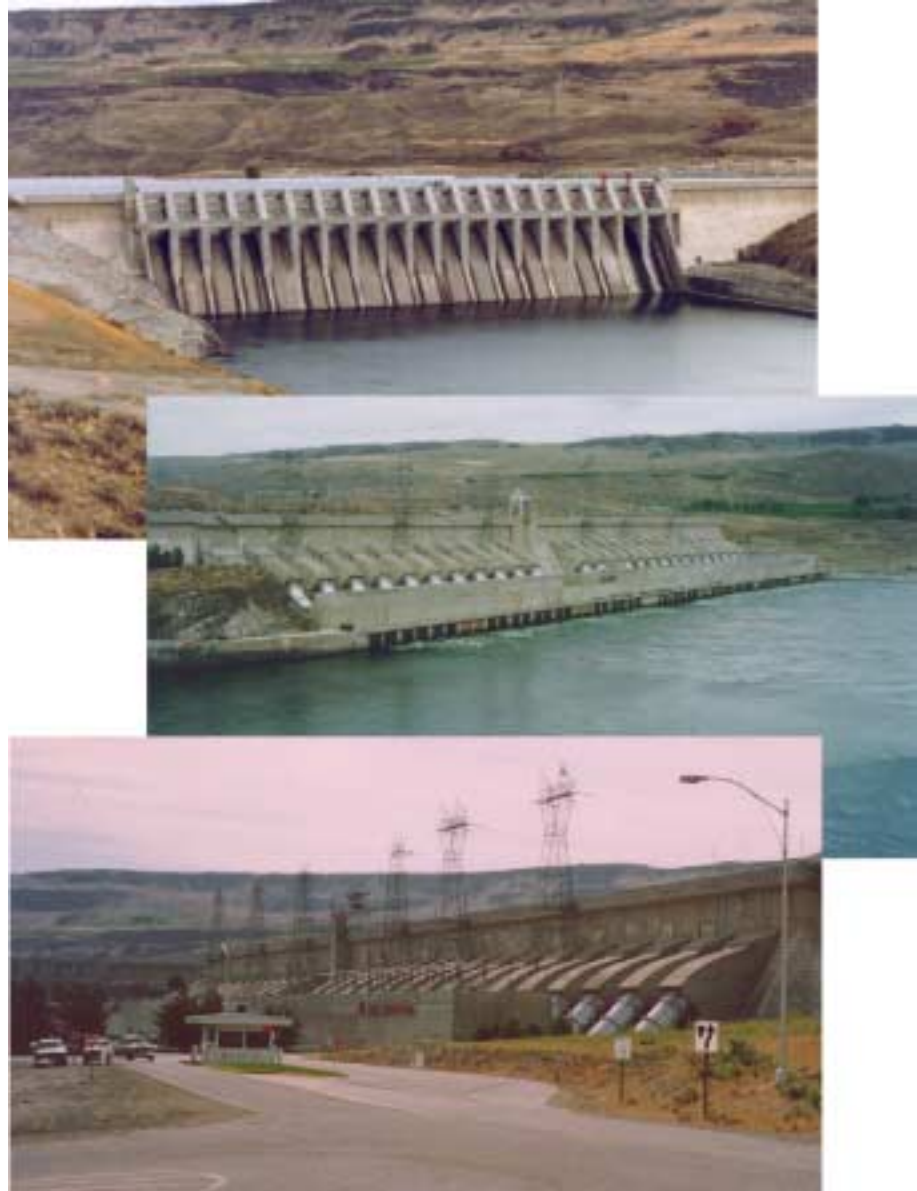
The Project Operations area covers approximately 266.17 fee acres and includes the dam and appurtenant structures as well as buildings, support structures, roadways, and miscellaneous lands.

### **5.2 DAM AND APPURTENANT STRUCTURES**

5.2.1 Description. The Project Operations area includes those structures and facilities listed below. Plate 4-2 provides the general location; Photo 5-4 provides a more detailed layout.

- a. Non-overflow Section. The non-overflow section includes 4 non-overflow monoliths on the right bank (monoliths 1 to 4) and 22 non-overflow monoliths between the spillway and intake monoliths (monoliths 25 to 44, A and B). The powerhouse access road provides employee and limited visitor parking. Another road crosses the top of the intake structure from the left bank and joins the spillway access road at the buttonhook. This intake road is gated and provides primarily employee and contractor access to boathouse facilities and the intake structure.
- b. Spillway Section. The concrete gravity spillway is located in monoliths 5 to 24. The spillway consists of 19 tainter gates that discharge into a 915-foot-wide stilling basin (refer to Photo 5-1). Access to the trunnion bearings on the gates for maintenance is via a

bridge that crosses the face of the spillway. This sidewalk provides a closeup view of the spillway for the public en route to the powerhouse visitor center. All gates are individually and remotely controlled from the control room in the powerhouse or at each gate.



**Photo 5-1: Chief Joseph Dam and appurtenant structures showing the trunnion bridge and the 19 gates of the spillway section (1982, top), the 27 penstocks through the powerhouse with the visitor center entrance below the far left penstock (July 1996, middle), and the security access control facility at the west end of the powerhouse (July 1996, bottom).**

The right bank spillway access road crosses the spillway to the buttonhook joining with the intake road. The right bank spillway access road is gated near Lupine Way. Since the completion of the visitor center, this road is open to the public up to the buttonhook turnaround during the visitor season (April-October). The road can be closed to public access during times of construction and security alerts.

c. Power Intake Section. The power intake section consists of twenty-seven 25-foot-diameter steel plate penstocks for main river generation and two, 6-foot-diameter intakes for station service power generation (refer to Photo 5-1). A floating boathouse was added to the intake section in 1979 during the pool raise (see Photo 5-2 below).



**Photo 5-2: A heated boathouse was installed in 1979. It houses two 24-foot-long boats and one 20-foot boat. Instrumentation for dissolved gas monitoring and a sending unit for the data are attached to the side of the structure (see Section 5.10.1 for more information). August 2001.**

d. Powerhouse. The powerhouse is 2,039 feet long and houses 27 Francis-type turbines with generators for a total nameplate capacity of 2,614 megawatts (refer to Photos 5-1 and 5-3). The powerhouse structure contains electrical and mechanical shops for maintenance as well as all controls and monitoring equipment necessary for operation of the dam. A visitor center in the east end of the powerhouse provides public restrooms and an interpretive area. Section 5.2.1g below describes the visitor center in more detail.

e. Security System. The extensive and sophisticated security system is designed to (a) deter or provide early detection of unauthorized access to sensitive areas, documents, and equipment; (b) delay progress of intruders while personnel assess and react to the situation; and (c) provide satisfactory security with minimum staffing requirements. The system includes an access control facility (see Photo 5-1), security cameras, and intrusion detection devices. Improvements are made on an ongoing basis.

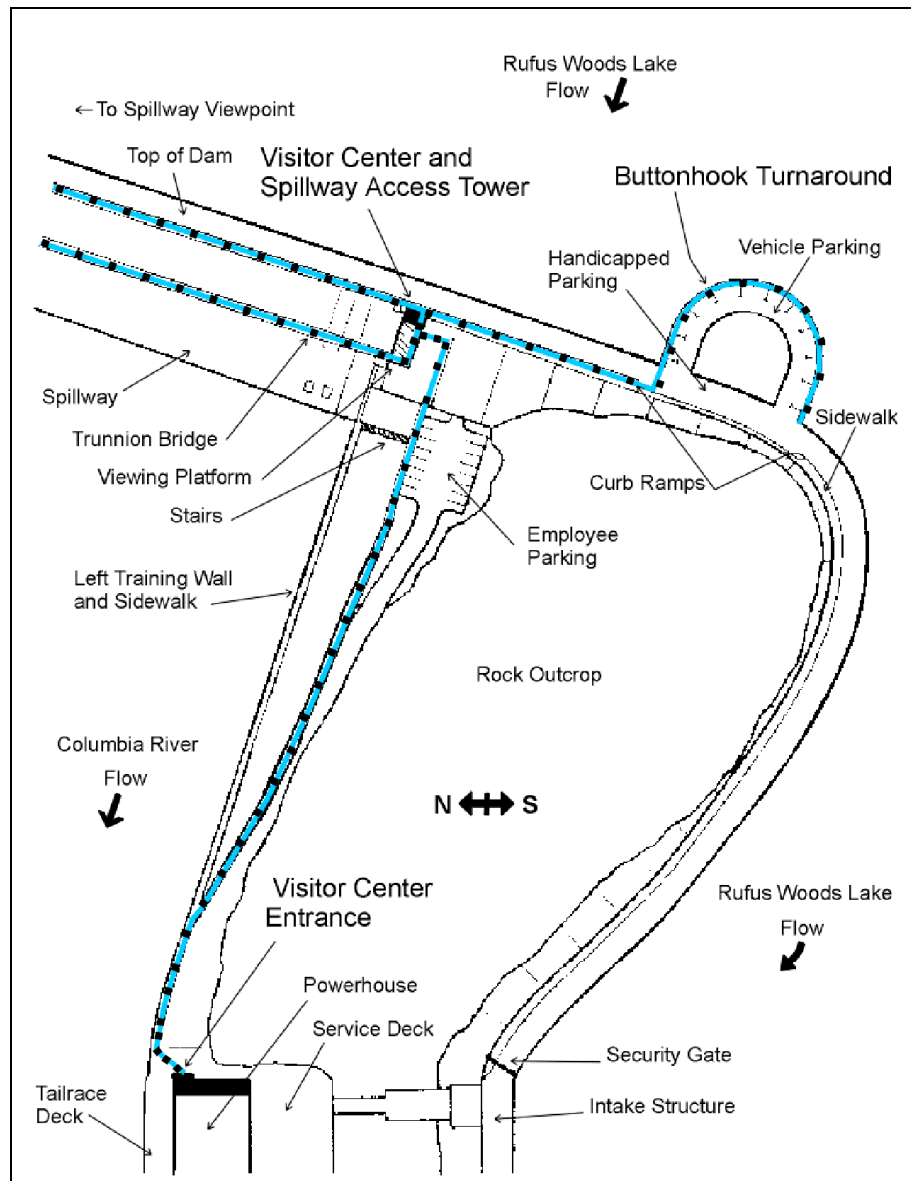
f. Buttonhook. The buttonhook is a turnaround located on the top of the dam structure that serves as primary parking for the visitor center (refer to Figure 5-1 for location).

g. Visitor Center. A type B visitor center was dedicated July 1988. It is located in the east end of the powerhouse. Visitors are guided toward the powerhouse by signs along Lupine Way and at the spillway viewpoint. Visitor parking is provided at the spillway viewpoint and the buttonhook turnaround at the top of the dam. Visitors can proceed to the elevator in the left access tower and descend to elevation 832 feet (ground level). Figure 5-1 below shows the public access routes to the visitor center.

Visitors proceed toward the powerhouse following a signed walkway. Interpretive exhibits are displayed along the visitor routes. Pre-arranged tours are often routed from the west end of the powerhouse (such as school groups arriving via bus), as are those in need of assistance (such as mobility-restricted individuals).

Construction of a new visitor center in another location has been considered. The current visitor access route across the top of the dam is often blocked by spillway maintenance work occurring during the visitor season. A lengthy detour via the tailrace deck, accessed from the west end of the powerhouse, is offered when conditions permit. Also, only the lower level of the present visitor center is ADA accessible as there is no elevator to the upper floor theater and exhibitry. Exhibits in the existing space of the powerhouse would focus on the powerhouse and generation of electricity if a new visitor center is constructed. A feasibility study for site evaluations, conceptual designs, and layout alternatives was completed in 2000. However, Corps policy for development of public facilities, as described in Section 12.2.1, Future Design Recommendations, would require local funding, lease agreements with local government units, or other means of funding.





**Figure 5-1: Public access route to the visitor center (shaded dotted line).**

The present 1,467 square-foot visitor center includes an entry structure, two interior floor levels (elevations 810 and 819.5 feet), restrooms, and janitor's closet (see Photo 5-3). Most interpretive exhibits are provided on the lower level which are ADA accessible. A nine-minute audio-visual presentation is housed in a nine-seat theater on the upper level along with other exhibits. Both floors provide large window viewing of the powerhouse interior. Exhibit upgrades are scheduled for 2002.



**Photo 5-3: Visitor center exhibits and displays describe the missions of Chief Joseph Dam. A window view of the 27 generators can be deceiving—2,039 feet long—the second longest straight-line powerhouse in the world. October 2000.**

#### 5.2.2 Resource Objectives.

- a. To continue necessary O&M functions integral to Chief Joseph Dam and appurtenant structures.
- b. To provide safe access to designated areas for work crews and visitors.
- c. To provide convenient and accessible opportunities for the public to understand the purposes of the Chief Joseph Dam project, the concept of its operation, and the natural and manmade features of the area.

### 5.2.3 Rationale.

- a. The dam and appurtenant structures are required for O&M purposes.
- b. Educating the public through interpretation is a means to enhance visitor appreciation of the Chief Joseph Dam mission, serves to improve compliance with Corps regulations, and reduces the risk of visitor injuries.

### 5.2.4 Development and Management Actions.

- a. Maintain physical security at Chief Joseph Dam.
- b. Provide special group tours and regularly scheduled tours of the dam during the summer season.
- c. Allow controlled public access that does not interfere with operation purposes.
- d. Restrict visitor access to public areas during periods of potentially hazardous operations or construction.
- e. Upgrade visitor exhibits as needed.

### 5.2.5 Major Constraints. None.

## **5.3 WILDLIFE MITIGATION OPERATION & MAINTENANCE FACILITY**

5.3.1 Description. This 1.2-acre site is located on the east end of the left bank recreation area 0.5 miles upstream from Chief Joseph Dam (see Plate 4-2 and Photo 5-4 for its location). The facility consists of a boat basin, dock, and mitigation building that was constructed in 1987. The immediate area, ~~and~~ is gated and fenced for security purposes. As part of the contract with the CCT for wildlife mitigation O&M services, the building and all associated items (such as boats, tools, and cameras) were officially transferred as government-furnished property to the CCT. The CCT is responsible for building and grounds maintenance. Plumbing, electrical, and other major problems inside the building are the responsibility of the Corps of Engineers. Photo 7-1 provides an area overview and closeup.

5.3.2 Resource Objective. To support O&M functions integral to the operation of the wildlife mitigation program.

5.3.3 Rationale. The wildlife mitigation O&M facility is required to carry out the wildlife mitigation program specified in *DM 52: Wildlife and Threatened Species Mitigation* (October 1980), as described in Section 9, Operations: Mitigation.

5.3.4 Development and Management Actions.

- a. The Corps will assure the contractor performs weed control and maintains order of the compound.
- b. The Corps will perform major repairs as needed.

5.3.5 Major Constraints. None.

## **5.4 LEFT BANK STORAGE AREA**

5.4.1 Description. The left bank storage area is situated on a 20.7-acre site just upstream from the dam (see Plate 4-2 and Photo 5-4). It is fenced for general outdoor storage and stockpiling purposes.

5.4.2 Resource Objective. To provide a secure storage area for the routine O&M of the project in an organized and aesthetically acceptable manner.

5.4.3 Rationale. This site is used and required for O&M purposes.

5.4.4 Development and Management Actions.

- a. Maintain the fence and wall surrounding the site.
- b. Maintain security, including signs, cameras, and patrols.
- c. Maintain a weed-free surface for equipment and storage materials.

5.4.5 Major Constraints. None.



Photo 5-4: Project operations features are put into perspective in this aerial. The visitor center is located at the red star. June 4, 2000.

## **5.5 LEFT BANK OPERATIONS AREA**

5.5.1 Description. This 81.2-acre area includes the maintenance and warehouse area, project office, and a portion of Foster Creek. It also contains seven piezometer wells and a dam cutoff wall. Pearl Hill Road traverses the area. Refer to Plate 4-2 for the location. Some of the structures described below are displayed in Photo 5-5; an aerial overview is provided in Photo 5-6.

a. Maintenance and Warehouse Area. This area is located downstream from the dam on the left bank in a fenced area. Facilities include a warehouse, utility building, automotive shop, storage building, and outside storage space. A warehouse addition, together with carpenter and paint shops, adjoins the downstream end of the existing warehouse. A sandblasting building is located at the northeast corner of the warehouse area. A sand hopper located across from the resource section annex will remain where it is indefinitely. The existing warehouse is used for dry storage of materials and equipment unsuitable for storage at other locations.

Downstream from the main warehouse is another warehouse and the Commons Building—a multi-purpose facility built in 1999 that houses a conference room, a computer training room, a kitchen, and provides storage. Close to the Columbia River is a playground and a 30- by 50-foot group picnic shelter. The public may reserve the shelter through a special use permit. Also along this shoreline is a river level gaging station. Public Utilities District No. 1 of Douglas County licenses the use of this building from the Corps. Refer to Section 5.10.1 for a complete description of this structure and its use.

b. Project Office. This building is located on the left bank across Pearl Hill Road from the warehouse area. The building is a concrete tilt-up structure and houses the operating project manager, recreation and natural resources staff, technical engineering staff, and administration staff.

c. Lower Foster Creek. Foster Creek is located immediately downstream from the dam on the left bank. Historic Foster Creek bridge is included in this area but maintenance is the responsibility of Douglas County. The channel was modified during dam construction and is riprapped to approximately 900 feet up the creek. This area is prone to periodic flooding within the channel during infrequent upstream runoff events. Amenities to accommodate tribal use of the area while fishing include a sun shelter and vault toilet, installed during summer 2001, and trash receptacles. The lawn is irrigated.





Sand Hopper and Warehouse



Commons Building



Group Picnic Shelter



Project Office



Photo 5-5: Left bank operations area structures.



**Photo 5-6: Left bank operations area. The south viewpoint is discussed in Section 6.5.1. The left bank wildlife management area is discussed in Section 7.3.2. June 4, 2000.**

5.5.2 Resource Objective. To continue O&M functions in accordance with Chief Joseph Dam's authorized purposes.

5.5.3 Rationale. This area is used and required for O&M purposes.

5.5.4 Development and Management Actions.

- a. Maintain riprap on Foster Creek to prevent bank erosion.
- b. Maintain buildings, structures, and adjacent areas in an organized and aesthetically acceptable manner.

5.5.5 Major Constraints. None.

## **5.6 RIGHT BANK STAGING AREA**

5.6.1 Description. The right bank staging area totals 4.6 acres. Originally, it was located west of its present site on 37.6 acres and utilized for piezometer wells, spillway gate construction and maintenance, and as a staging area during construction of the additional units. The current staging area, located northeast of the spillway viewpoint (see Plate 4-2), was established for maintenance and construction needs.

5.6.2 Resource Objectives.

- a. To retain a site for construction and maintenance purposes.



- b. To perform passive wildlife management until the site is needed for construction and maintenance purposes.

5.6.3 Rationale. An area is required for O&M needs. Wildlife utilize the site because it is surrounded by the right bank wildlife management area.

5.6.4 Development and Management Actions.

- a. Close and reclaim unnecessary roads.
- b. Clean up the area.
- c. Perform weed control as needed.
- d. Perform wildlife management, as appropriate.

5.6.5 Major Constraints. None.

## **5.7 COLUMBIA RIVER BRIDGE**

5.7.1 Description. State Route 17 Columbia River bridge (1950) and a portion of SR 17 connecting Pearl Hill Road and Lupine Way were built during construction of Chief Joseph Dam (see Plate 4-2 for location and Photo 5-7 below). The majority of Corps fee land associated with SR 17 was excessed to GSA in 1988 (see Section 2.7.3, Project Lands Reported as Excess). The Corps retains a 6.4-acre easement for the bridge structure, a 39.44-acre easement for highway access to the bridge on the left bank (looking downstream), 5.3 acres in fee on the left bank just downstream from the bridge, and 3.4 acres in fee on the right bank. Currently, the WSDOT maintains the bridge through a license agreement with the Corps.

**Photo 5-7: Columbia River bridge (SR 17) looking downstream from the left bank wildlife management area. October 2000.**



During Washington State's energy conservation era (1977-1981), the Corps turned off the lighting across the Columbia River bridge. Age and deterioration of the lights set in over the years. In response to requests from the city of Bridgeport and the Bridgeport chamber of commerce to re-light the bridge for safety and aesthetic reasons, the Corps of Engineers engaged in a cooperative agreement with the city and the WSDOT. New lights and materials purchased by the Corps were installed by the WSDOT, who will also maintain the lights. The city of Bridgeport pays all power costs. Dedication took place June 8, 1998.

A new guardrail was needed across the bridge for safety and was installed by the WSDOT during summer 2001. Bridge painting was also done during summer 2001. Cost for the new rail and paint ~~is~~ was borne by the WSDOT.

Future plans may extend the north shore trail, described in Section 7.3.3, Right Bank Wildlife Management Area, from the visitor orientation area, across SR 17 Columbia River bridge, to the city of Bridgeport. A feasibility study was completed January 2001 to widen the bridge for safely accommodating pedestrians and bicyclists. However, before this can be accomplished, the WSDOT would need to approve the widening and modification of the bridge. Due to its 1995 listing on the National Register of Historic Places,<sup>1</sup> modification may need to comply with *The Secretary of Interior's Guidelines for the Treatment of Historic Properties*.

#### 5.7.2 Resource Objectives.

- a. To provide safe public access across the Columbia River bridge.

5.7.3 Rationale. State Route 17 is a public highway and the main access to Chief Joseph Dam.

#### 5.7.4 Development and Management Actions.

- a. Provide administration of the bridge easement to the WSDOT.
- b. Support a cooperative agreement with the WSDOT and the city of Bridgeport to maintain lighting on the bridge.

#### 5.7.5 Major Constraint. None.

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<sup>1</sup> Historic certification May 31, 1995 (National Register Information System, [www.nr.nps.gov](http://www.nr.nps.gov)).

## **5.8 BRIDGEPORT SLIDE AREA**

5.8.1 Description. Portions of the left bank in the vicinity of the dam lie within a prehistoric slide called the Bridgeport Slide (refer to Plates 4-1 and 4-2 for location). Encompassing about 800 acres (1.25 square miles), the slide includes both fee and flowage easement lands. A 50.1-acre area along the shoreline upstream from the upstream boat ramp was identified as potentially hazardous due to the creation of Rufus Woods Lake. Named the Bridgeport Slide Area, this 50.1 acres was acquired in fee by the Corps and designated as uninhabitable. No development of the area is allowed. Inclinometers, placed both parallel and perpendicular to the river, monitor slope movement. The most severe movements have occurred in instruments close to the river with the highest movements recorded of magnitudes approaching four-tenths of an inch in a very wet year. The slide is not currently considered to be a threat but continues to be monitored by the Seattle District's Civil and Soils Section. Public use of the area includes walking along Old Pearl Hill Road (barricaded from vehicle use), and use of the beach by boaters from Bridgeport State Park for sunbathing, waterskiing, and water play.

### 5.8.2 Resource Objectives.

- a. To leave the land as is and allow natural movement.
- b. To watch for acceleration of earth movement.
- c. To ensure no placement of structures for human habitation.
- d. To control noxious weeds and other undesirable weed species on a limited basis.

### 5.8.3 Rationale.

- a. A major failure of this area could cause damage to the dam and abutments by overtopping the dam.
- b. Injury could occur if the land is inhabited.

### 5.8.4 Development and Management Actions.

- a. Monitor instruments for bank instability.
- b. Perform weed control as needed.

### 5.8.5 Major Constraints. None.

## **5.9 BIG HOLE QUARRY**

5.9.1 Description. This 99.1-acre quarry site is located downstream from Chief Joseph Dam on the right bank of Lake Pateros. Refer to Plate 4-1 for the location and Plate 5-1 for an area overview. The area was used as a borrow source during construction of the dam and installation of the additional generating units. In the past, the site has been used as a traditional quarry where round river rock was sorted and crushed as needed. It continues to provide sand and gravel for normal O&M needs. Occasionally, the state stores material from other quarries at this site. A small pond located near the river provides a water source for washing gravel and equipment. The site will continue to be used, as needed, for gravel crushing operations as well as for stockpiling purposes. There is a long-standing pattern of public use of the site for activities such as swimming, picnicking, volleyball, and target practicing. Due to sanitation and safety concerns, the Corps will regulate public day use.

In April 1987, the Corps reported 96.5 acres, directly north of the quarry, to be in excess to Corps needs. The GSA transferred fee title real estate to the U.S. Department of Interior's Bureau of Indian Affairs (BIA) in July 1987 for construction of a resident trout hatchery to be operated by the Colville Confederated Tribes. The hatchery was completed in 1989. The quarry site was contoured, shaped and cleaned up in 1991 to provide a safer area.

### 5.9.2 Resource Objectives.

- a. To utilize the site as a source for sand and gravel.
- b. To regulate public day use spring through fall.
- c. To control noxious weeds and other undesirable weed species.

5.9.3 Rationale. The area provides a convenient source for sand and gravel. Because of an existing clean pool of water in the corner of the site, the public has been entering and using the area for recreation. It is not the intention of the Corps to eliminate public use.

### 5.9.4 Development and Management Actions.

- a. Provide enough amenities to insure a safe and clean day use environment.
- b. Perform weed control as needed.

### 5.9.5 Major Constraints. None.





J.O. 06/29/00



# Chief Joseph Dam Master Plan

## BIG HOLE QUARRY



US Army Corps  
of Engineers  
Seattle District



Corps Fee Boundary

Aerial Base 09/04/00

**Plate 5-1**

## 5.10 GAGING STATIONS

**5.10.1 Description.** Excluding weather monitoring equipment, Chief Joseph Dam has four gaging stations—two stream gaging stations of which one includes a cableway, and two dissolved gas monitoring devices. These stations are described in more detail below.

- a. Downstream gaging station and cableway. A downstream gaging station and cableway are located 0.5 miles downstream from the dam along the city shoreline of Bridgeport (refer to Plate 4-1 for its location, Plate 5-2 for an area overview, and Photo 5-8 for a closeup). The original structures were constructed by the USGS in 1951. Their purpose was to provide reliable water surface and discharge measurements during the construction of Chief Joseph Dam, and to provide reliable information on which to base the control of Columbia River flows after the dam was completed. It was thought the gaging station would possibly replace the existing USGS station at Grand Coulee, but both stations remain today.



**Photo 5-8. The downstream gaging station (left) provided a station rating for water height in the Columbia River prior to the construction of Wells Dam and creation of Lake Pateros. An overhead cableway (right) continues to provide river velocity data. August 2001.**

Both structures sit on 0.57 fee acres on the north and south shore with a 2.12-acre perpetual right-of-way easement from the state of Washington across the Columbia River. The gaging station—USGS gaging station #12438000—and overhead cableway are the property of the Corps of Engineers. Following completion of Wells Dam in the late 1960's and the creation of Lake Pateros, the USGS removed their instruments from the gaging station in 1987 as the structure was no longer needed. Slope computations in conjunction with the upstream gaging station were abandoned. Computations of discharges from Chief Joseph Dam were replaced with modern equipment installed in the dam itself and transmitted directly to the USGS. Data is published annually in a USGS water-data report.

The overhead cableway continues to be operated and maintained by the USGS. At least six times a year, the USGS measures discharge from Chief Joseph Dam. This involves suspending a meter to measure velocity, and sounding the bottom with a 200-pound weight to determine depth. As part of a nationwide cooperative program between the USGS and the Corps of Engineers, the USGS mails their finding to Chief Joseph Dam quarterly. In September 1993, the Corps cost-shared with the USGS for repair work on the cableway.

b. Upstream gaging station. Due to loss of potential power generation at Chief Joseph Dam following completion of Wells Dam by Public Utility District No. 1 of Douglas County (Douglas PUD), a river level gaging station was constructed upstream from Chief Joseph Dam on the left bank, near the current group picnic shelter (see Photo 5-6 for its location and Photo 5-9 below for a closeup). The structure is property of the Corps of Engineers. Structure maintenance is the responsibility of Douglas PUD. Originally used by Douglas PUD to determine water surface slope in conjunction with readings from the downstream gaging station, the current USGS instrumentation now records tailwater levels. Data is provided to Douglas PUD under the same nationwide cooperative program as described above. License for use of the structure by Douglas PUD is currently under DACW67-3-96-17 (including Supplement 1) and expires December 2, 2010.



**Photo 5-9. An upstream river level gaging station houses USGS instruments that record tailwater levels for Douglas PUD. August 2001.**

c. Dissolved gas monitors. Two dissolved gas monitors are located close to Chief Joseph Dam. Both of these monitors have sensors located 10-15 feet below the water surface for monitoring total dissolved gas. The upstream monitor is attached to the side of Chief Joseph Dam's boathouse as mentioned in Photo 5-2.

The downstream monitor was installed in 1997 on the north shore (Okanogan County) approximately 450 feet downstream from the Columbia River bridge, SR 17. A lease agreement between a private



landowner and the Corps of Engineers for 0.01 acres permitted the Corps to install a pole for anchoring equipment, including a data collection platform. The equipment is powered via connection to the landowner's pump panel pole. Data is collected hourly and transmitted via a Geostationary Operational Environmental Satellite (GOES) to the Reservoir Control Center at the Corps' Northwestern Division office.

#### 5.10.2 Resource Objectives.

- a. To allow the USGS continued maintenance and operation of the downstream cableway system, and any future use of the downstream gaging station, if needed.
- b. To allow Douglas PUD continued maintenance and operation of the upstream river level gaging station as stated in the current license agreement.
- c. To allow continued maintenance and operation of the upstream and downstream dissolved gas monitors by the Seattle District Hydrology and Hydraulics Section.
- d. To maintain the grounds for accessibility.

#### 5.10.3 Rationale.

- a. Gaging stations and cableways play an integral part in managing the Columbia River for efficient hydropower, effective fish production, and flood control.
- b. Dissolved gas monitors play an important role for increasing fish survivability.

#### 5.10.4 Development and Management Actions.

- a. Provide periodic mowing and weed control for accessibility to structures.
- b. Assist in the administration of the agreement between the Corps of Engineers and Douglas PUD, as needed.

#### 5.10.5 Major Constraints. None





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## **SECTION 6**

### **OPERATIONS: RECREATION**

## SECTION 6 - OPERATIONS: RECREATION

### 6.1 GENERAL

Section 6 describes Operations lands under the Recreation classification. Lands under this category are developed and managed for intensive recreational use. As described in Section 12.2.1, Future Design Recommendations, it is the policy of the Corps of Engineers to encourage non-federal participation in the development and administration of recreation developments at Corps projects, per guidelines in ER 1165-2-400, *Recreation Planning, Development, and Management Policies*. Operation, maintenance and replacement costs would be the responsibility of the local sponsor.

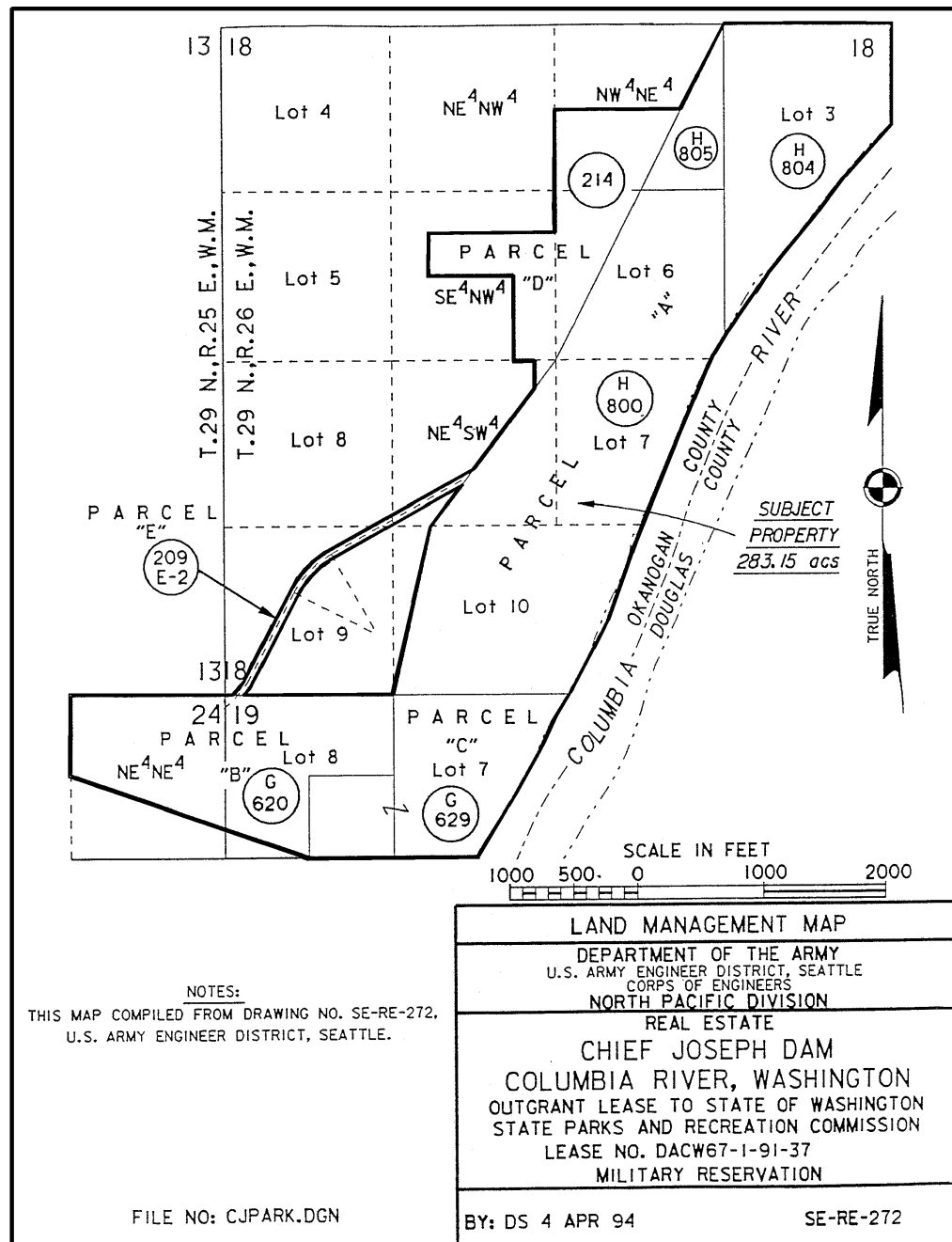
Seven areas totaling 318.18 acres are listed under the Recreation category and include Bridgeport State Park (and Lake Woods Golf Course), the right bank fishing area, the visitor orientation area, three viewpoints, and the downstream boat ramp. Each area is explained more fully below, including its resource objectives and rationale, development and management actions, and identification of major constraints to its current or future resource use, development, and management.

### 6.2 BRIDGEPORT STATE PARK

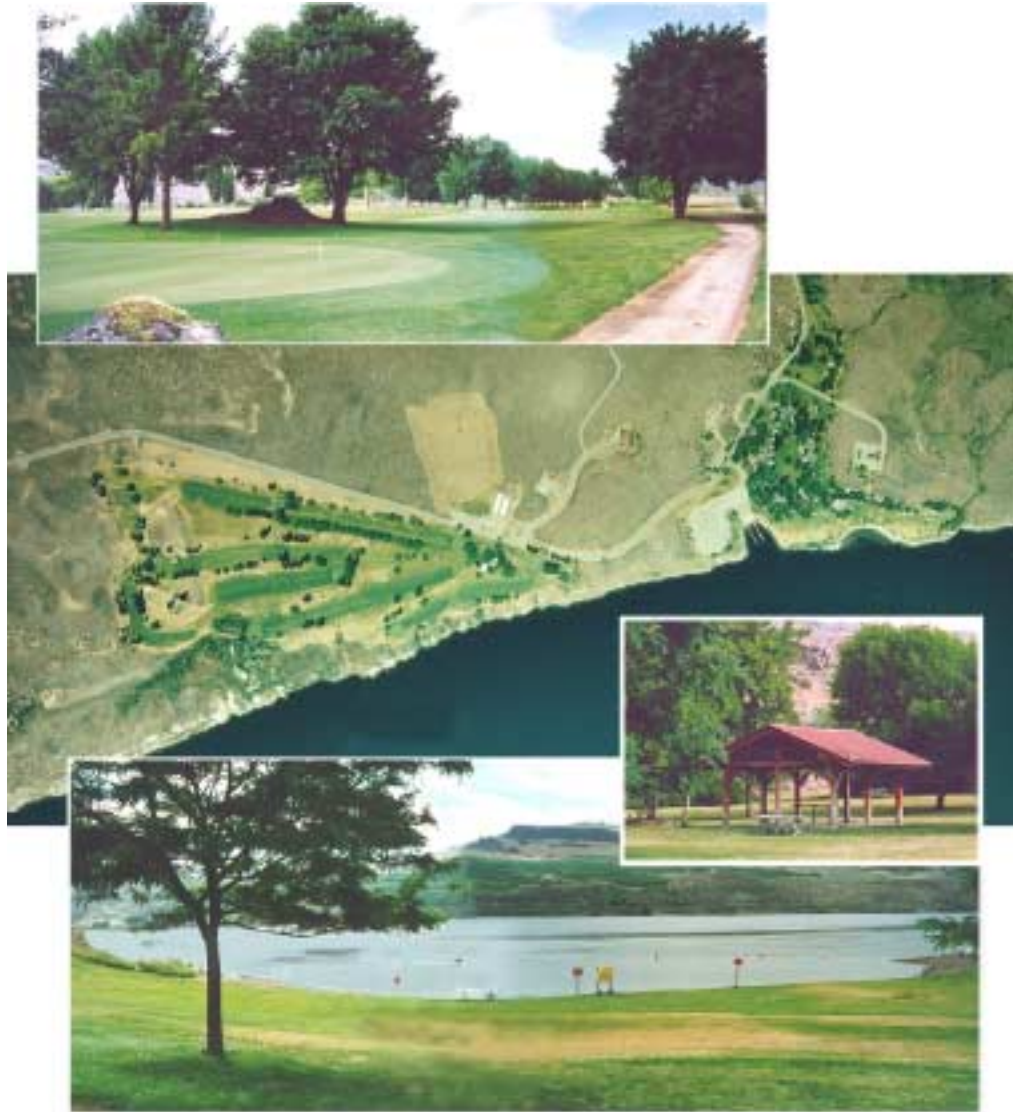
6.2.1 Description. Bridgeport State Park is located on the right bank of Rufus Woods Lake, upstream from Chief Joseph Dam at RM 547.6 (see Plate 4-1 for the location). The park consists of 717.25 acres, of which 283.15 acres are owned by the United States and leased to the Washington State Parks and Recreation Commission. The remaining 434.1 acres are owned by the state. Most of the developed facilities lie within the leased area. The state subleases an 80-acre portion to the Lake Woods Golf Club for a 9-hole golf course constructed in 1964. See Plate 6-1 for an area overview.

Bridgeport State Park provides service facilities for both day and overnight camping users. The lease for Bridgeport State Park dates to 1955 when approximately 155.4 acres were leased to the state to operate and maintain. Approximately 33.6 acres were added in 1963 and 35.43 acres were added in 1986. The park was partially developed before 1964 when 20 acres were developed with lawn, trees, a restroom, an irrigation system, and requisite utilities. In 1968, the Corps of Engineers developed a 28-unit camping area and, in 1970, a trailer disposal station was added. These two additions added another 168.90 acres to the lease for a total of 393.33 acres. The 1988 draft master plan recommended a portion of the leased lands, that contained no park facilities and were not managed as part of the park, be deleted from the lease. Subsequently, as part of a new 25-year park lease granted in 1990 (term October 1, 1990 to September 30, 2015), 110.18 acres

were deleted from the previous leased amount resulting in a lease total of 283.15 acres (refer to Figure 6-1 below for a parcel diagram).



**Figure 6-1: Bridgeport State Park lease diagram. Parcels leased to the Washington State Parks and Recreation Commission include Parcels A, B, C, and D.**



**Photo 6-1: Lake Woods Golf Course and Bridgeport State Park. Inserts depict the golf course (top), group camp area (middle), and the swim area (bottom). July 17, 1996.**

The Corps and the Washington State Parks and Recreation Commission have been cooperating in developing Bridgeport State Park as a major recreation facility associated with Rufus Woods Lake (see Photo 6-1 above showing some of the park features). The last expansion and modernization of the park, in accordance with *DM 50: Bridgeport State Park Expansion*, was completed in 1987. The Corps of Engineers funded the construction. It included the addition of a swimming beach, boat launch facility, bathhouse, comfort station, picnic shelter, additional parking facilities, and improvement to the entrance road and existing campsites. Improvements for the campground included the addition of 2 campsites for a total of 30 sites, utility hookups for 20 of the 30 sites, a group camping area

with a restroom and kitchen shelter, an information area (information board, phone, parking), and administration area (permanent ranger residence, maintenance building, yard). In the day use area a children's play area, sun shelters, picnic tables and stoves were added. Other modifications included installation of a buoy boom for the swimming area, minor riprap repair for erosion, improvement of the domestic and irrigation water systems, trail development and landscaping. Several campsites are ADA accessible. In partnership with the state park, Corps rangers provide summer evening interpretive programs at the park. These programs are well received by visitors. For more information about Bridgeport State Park, refer to the Washington State Parks website at [www.parks.wa.gov](http://www.parks.wa.gov)

Future plans are to extend the north shore trail from the Corps' north boundary line to the state park. Refer to Section 7.3.3, Right Bank Wildlife Management Area, for more information describing this trail system.

6.2.2 Resource Objective. To continue to lease park facilities to the Washington State Parks and Recreation Commission for O&M.


6.2.3 Rationale. The Secretary of the Army entered into a lease with the Washington State Parks and Recreation Commission for public park and recreational purposes. The Commission has agreed to assume full financial responsibility for O&M of the park, subject to appropriations by the state legislature. Maintenance of a lease is advantageous to, and in the best interest of, the federal government and the public.

6.2.4 Development and Management Action. Provide real estate management of the lease to the Washington State Parks and Recreation Commission. Reference lease No. DACW67-1-91-37.

6.2.5 Major Constraints. None.





  
 300 0 300 Feet  
 Scale = 1:3600; 1 inch = 300 feet  
 aerial base 8/12/93; CADD drawing 3/98

 Corps Fee Boundary

Chief Joseph Dam Master Plan



BRIDGEPORT STATE PARK

US Army Corps  
 of Engineers  
 Seattle District

Plate 6-1



## 6.3 RIGHT BANK FISHING AREA

**6.3.1 Description.** Immediately downstream from the dam on the right bank is a concrete wall with an integral set of concrete stairs and railing that serve as a fishing area for tribal anglers only (see Plate 4-2 and Photo 5-4 for location and Photo 6-2 below for a closeup aerial view). The entire area encompasses 12.3 acres. Two shelters and a vault toilet, utilized primarily by anglers, are located at the end of the lower spillway access road. Another shelter is located at the end of the paved road west of the fishing area. The fishing area is used year-round by tribal members for catching salmon, primarily. Steelhead are also taken from this area, but the steelhead take is closely monitored since their listing as a threatened fish in 1997.



**Photo 6-2: Right bank fishing area showing public amenities. Aerial June 4, 2000.**

Because the right bank is within the Colville Indian Reservation, the Colville Confederated Tribes has jurisdiction over all fishing activity. Section 2.14, Fish and Fisheries, states by formal agreement, visitors can fish by boat anywhere within Rufus Woods Lake or Lake Pateros with either a tribal or



state fishing license. A tribal license is required to fish from the right bank (Okanogan County, north shoreline), including the dock at Bridgeport State Park, except that *only* tribal members are allowed to fish from the shore between Chief Joseph Dam and the Columbia River bridge.

#### 6.3.2 Resource Objectives.

- a. To provide a safe public use area.
- b. To provide a fishing area for tribal members only.
- c. To enhance visitor enjoyment of the area.

#### 6.3.3 Rationale.

- a. This site is the only location on the right bank that is convenient for tribal only fishing.
- b. The close location to the spillway allows visitors to enjoy a spectacular closeup view of the dam.

#### 6.3.4 Development and Management Actions.

- a. Restrict visitor access during periods of potentially hazardous operations or security alerts.
- b. Keep stair system clear of debris (rocks and gravel) and eliminate small sink holes in the rip-rapped area.
- c. Maintain shelters and grounds.
- d. Provide and maintain fire rings.

#### 6.3.5 Major Constraints. None.

### **6.4 VISITOR ORIENTATION AREA**

6.4.1 Description. The visitor orientation area, encompassing 16.1 acres, is located close to SR 17 near the Columbia River bridge (see Plate 4-2 and Photo 7-5 for the location). Original construction, including the orientation shelter, was completed in July 1987. A turbine runner exhibit, vault toilets and a trail to an observation deck overlooking Lake Pateros and the Chief Joseph Dam project were added in the early 1990's. In 2000, the toilet was converted

to a 350-square-foot water-borne facility. See Photo 6-3 for a collage of features at the visitor orientation area.



**Mourning Dove Labyrinth**  
March 2000



**Observation Deck**  
October 2000



**Restroom**  
March 2000



**Turbine Runner**  
July 1996



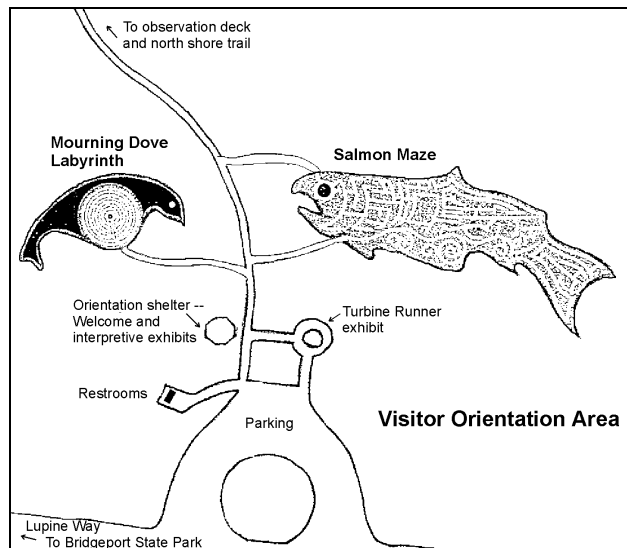
**Project Entry Sign**  
October 2000



**Photo 6-3: Features at the visitor orientation area. Aerial June 4, 2000.**

Two purposes of the orientation area are to improve public awareness of the Chief Joseph Dam project and its facilities by directing visitors to these areas, and to serve as an environmental education area through interpretive exhibits. A 150-foot-long labyrinth in the shape of a mourning dove (completed spring 2000) faces downstream towards a 225-foot-long maze

shaped as a salmon (completed spring 2001; see Figure 6-2 for a drawing rendition). Thirteen interpretative panels in the maze discuss salmon survival. Two additional panels discuss the relationship between salmon and tribal members. Design costs were provided by a donation from Douglas County Port Authority to the city of Bridgeport; construction costs were borne by the Corps of Engineers; coordination for design and interpretive signs have been through the Cultural Resources Department of the CCT.



**Figure 6-2: Exhibits at the visitor orientation area. A labyrinth provides a relaxing experience that gives the visitor time to think and reflect. It contains no dead ends. In contrast, a maze is playful and can be noisy while visitors try to find the exit. A maze contains many barriers, or dead ends.**

The north shore trail for pedestrians and bicycles, described in Section 7.3.3, Right Bank Wildlife Management Area, ends at the observation deck. Future plans would extend the trail from the orientation area to the city of Bridgeport via SR 17.

Landscaping of the visitor orientation area, including the maze and labyrinth, consists of trees, shrubs, lawn grass, and rock. An automatic irrigation system is provided adjacent to the parking area and orientation shelter. In 1991, 24 acres in and to the east of the visitor orientation area were leveled, seeded with grasses that out-compete noxious weeds, and irrigated with an aboveground system. In 2000, the irrigation system was converted to an underground system.

#### 6.4.2 Resource Objectives.

- a. To provide an attractive public use area with facilities, services, and exhibits that entices passing motorists to stop.
- b. To provide visitor understanding of the Chief Joseph Dam project.
- c. To provide for environmental educational opportunities.

#### 6.4.3 Rationale.

- a. The right bank is the focal point for motorists using SR 17 and provides a good view of the dam.
- b. Exhibits increase public awareness to available visitor facilities, acts as an attraction to entice visitors to the dam, and educates visitors about the Chief Joseph Dam project and its cultural and environmental resources.

#### 6.4.4 Development and Management Actions.

- a. Provide, and upgrade, facilities, services, and exhibits as needed.
- b. Maintain an aesthetically pleasing landscape, utilizing drought tolerant plantings.
- c. Perform weed control as needed.

#### 6.4.5 Major Constraints. None.

### **6.5 VIEWPOINTS**

6.5.1 Description. Three viewpoints are located close to the dam. These areas provide panoramic views of Chief Joseph Dam and the surrounding landscape and contain outdoor interpretive exhibits. Plate 4-2 shows the location of each viewpoint.

- a. South Viewpoint. The south viewpoint is located on 1.7 acres of the left bank, just off SR 17, overlooking the project office (see Photo 6-4 below and Photo 5-5). It provides a convenient stop and a view accenting the powerhouse. Amenities include a sun shelter, picnic tables, drinking water, interpretive exhibits and viewing binoculars. A vault toilet and children's play area was installed during summer 2001. A small island of irrigated grass provides a lush contrast to the natural arid landscape and creates an inviting setting.



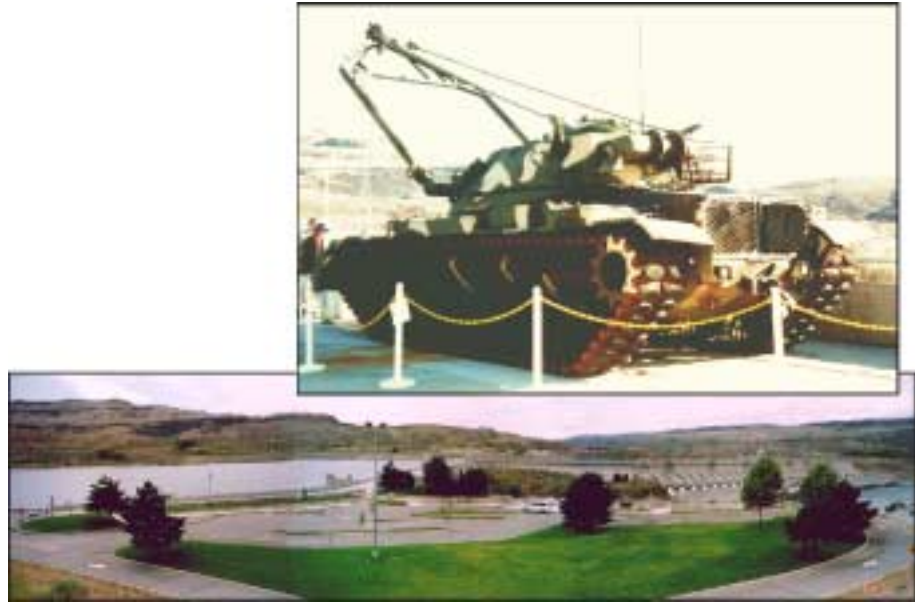
**Photo 6-4: The south viewpoint was upgraded fall 2000 to be ADA accessible. Hard surfaces were redefined for safety purposes and a vault toilet installed. June 4, 2001.**

b. North Viewpoint. The north viewpoint is located on 1.9 acres of the right bank providing an excellent view of the entire downstream portion of the dam structure (see Photos 5-4, 6-2, 6-5 below, and 7-5). Site amenities include interpretive exhibits, parking and a sun shelter. The xeric landscaping is low maintenance and blends in well with the general environment.



**Photo 6-5: North viewpoint. July 16, 1996.**

c. Spillway Viewpoint. The spillway viewpoint is located on 2.2 acres of the right bank overlooking the dam spillway structure and right bank fishing area (see Photos 5-4, 6-2, and 6-6 below). Parking, water-borne restrooms, drinking water, and interpretive signs are provided. Landscaping of the area is maintained through underground irrigation.



**Photo 6-6: Spillway viewpoint. In 1999, an M728 Combat Engineer Vehicle was added as a display. The intent is to interpret another aspect of the Corps of Engineers' mission—military involvement. March 28, 2000.**

#### 6.5.2 Resource Objectives.

- a. To provide aesthetically pleasing and universally accessible viewpoints and associated facilities to the public.
- b. To provide visitors with a further understanding of the purpose of Chief Joseph Dam and the U.S. Army Corps of Engineers.

6.5.3 Rationale. Viewpoint facilities with interpretive exhibits accommodate motorists using SR 17 and visitors passing through Corps lands. They allow the opportunity to stop and rest, view the dam and surrounding area, and learn more about Chief Joseph Dam and the Corps' various missions.

#### 6.5.4 Development and Management Actions.

- a. Maintain an aesthetically pleasing landscape, utilizing drought tolerant plantings.
- b. Perform weed control as needed.
- c. Upgrade structures to be vandal resistant.



- d. Upgrade viewpoints to be ADA accessible for wheelchairs (exhibits and displays at appropriate height; access to and from the parking and viewing areas; appropriate slopes and surfaces).
- e. Provide, and update interpretive exhibits as needed.
- f. Provide sanitary facilities at the south viewpoint.

6.5.5 Major Constraints. None.

## **6.6 DOWNSTREAM BOAT RAMP**

6.6.1 Description. The downstream boat ramp is located on the left (south) bank of Lake Pateros near RM 543, approximately 2.5 miles downstream from Chief Joseph Dam. Refer to Plates 4-1 and 6-2 for the location. Photo 6-7 below provides an area overview. In 1962, the Corps of Engineers constructed a single lane concrete boat ramp with a gravel surface access road and parking lot on a 0.83-acre site adjacent to the present Marina Park in Bridgeport (local interests donated about one acre of land to the Corps for this development). Eventually, the road and parking lot were paved. In 1988, this site was leased to the city of Bridgeport for 25 years for use in conjunction with their Marina Park for recreational purposes.



**Photo 6-7: Besides providing public access to the lake, the downstream boat ramp provides the only access for Corps personnel to Lake Pateros immediately downstream from the dam. July 17, 1996.**

6.6.2 Resource Objective. To ensure public and government access Lake Pateros downstream from the dam.

6.6.3 Rationale. River access is required to maintain government facilities downstream from the dam, and fulfills a public need for river access.

6.6.4 Development and Management Actions. Provide real estate management of the 25-year lease to the city of Bridgeport.

6.6.5 Major Constraints. None.





US Army Corps  
of Engineers  
Seattle District

# Chief Joseph Dam Master Plan DOWNSTREAM BOAT RAMP



Corps Fee Boundary

Aerial Base 06/04/00

JLG 06/29/00

**Plate 6-2**

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## **SECTION 7**

# **OPERATIONS: MULTIPLE RESOURCE MANAGEMENT**

## **SECTION 7 - OPERATIONS: MULTIPLE RESOURCE MANAGEMENT**

### **7.1 GENERAL**

Section 7 describes Operations lands under the Multiple Resource Management classification. These lands are managed for one or more uses but with compatibility to the primary land allocation. Use may include low density recreation, fish and wildlife management, vegetative management, and or inactive/future recreation areas. As described in Section 12.2.1, Future Design Recommendations, it is the policy of the Corps of Engineers to encourage non-federal participation in the development and administration of recreation developments at Corps projects, per guidelines in ER 1165-2-400, *Recreation Planning, Development, and Management Policies*. Operation, maintenance and replacement costs would be the responsibility of the local sponsor.

Currently, Chief Joseph Dam lands under this classification total 569.1 acres and include only low density recreation, and wildlife and vegetative management that are explained more fully below. Resource objectives and rationale, development and management actions, and identification of major constraints to its current or future resource use, development, and management are included in each area description.

### **7.2 LOW DENSITY RECREATION AREAS**

Three areas on Rufus Woods Lake are managed for low density recreation use—the left bank recreation area, Brandt’s Landing, and Rocky Flats. Camping is not permitted anywhere in the left bank recreation area or at Brandt’s Landing; however, primitive camping is being proposed for Rocky Flats.

7.2.1 Left Bank Recreation Area (57.1 acres). This area is located just upstream from Chief Joseph Dam and borders the east end of the left bank storage area. It consists of three subareas—the debris collection area, Willow Flat, and the upstream boat ramp. A small parcel of land within this area houses the wildlife mitigation O&M facility that is described in Section 5.3, Wildlife Mitigation Operations & Maintenance Facility. The entire left bank recreation area is heavily used by shore anglers, boaters, bird watchers, and hikers. Camping is not permitted anywhere in the left bank recreation area. See Plate 4-2 for the location. Photos 5-4 and 7-1, and Plate 7-1 provide an area overview.

The debris collection area on the west end includes public parking for anglers and picnickers, a permanent vault toilet, a fishing platform accessible to individuals with disabilities, picnic tables, fire rings, and trash receptacles. In the center of the recreation area is a debris collection basin. Floating woody

debris collects against a stationary log boom across Rufus Woods Lake, diverting debris into the basin where it is regularly removed. Smaller debris generally passes through the dam, but may lodge against the intake structure trash rack where it is removed periodically. The debris collection area is a popular public area for collection of firewood.

Just upstream from the wildlife mitigation O&M facility is the Willow Flat area. A hardened and packed gravel pedestrian trail that is wheelchair accessible leads from the debris collection area, around the debris basin to the downstream parking lot adjacent to the O&M facility, to the upstream boat ramp. Upgrades to this area in 2001 included a concrete path from the parking lot to the lower level complete with picnic tables and a trash receptacle, a sun shelter, a fire ring, and a floating fishing gangway and platform—all completely ADA accessible.

The upstream boat ramp on the east end includes parking for automobiles with boat trailers, a permanent vault toilet, picnic table, trash receptacle, dock, emergency public telephone, and information kiosk. In 1958, the Corps constructed the single lane concrete public boat ramp for recreation and operation use. The Chief Joseph Boating Club leased and operated the ramp until 1963. A new single-lane concrete ramp was constructed by the Corps following the 1981 pool raise. As stated in Section 2.14, Fish and Fisheries, by formal agreement, visitors can fish by boat anywhere within Rufus Woods Lake or Lake Pateros with either a tribal or state fishing license. A tribal license is required to fish from the right bank (Okanogan County, north shoreline), including the dock at Bridgeport State Park, except that *only* tribal members are allowed to fish from the shore between Chief Joseph Dam and the Columbia River bridge. To fish from left bank (Douglas County, south shoreline), only a state license is required.

a. Resource Objectives.

- 1) To support O&M functions integral to the operation of Chief Joseph Dam.
- 2) To ensure visitor safety during debris collection.
- 3) To provide safe year-round public access to Rufus Woods Lake for boaters.
- 4) To provide safe shoreline areas for anglers and visitors.
- 5) To provide an attractive public use area with facilities, services, and interpretive exhibits.

- 6) To use effective interpretive exhibits to promote water safety, to educate about private property along the lakeshore, and to warn of fire danger.
- b. Rationale.
    - 1) The debris collection area supports the O&M functions of the dam.
    - 2) The upstream boat ramp is the only location on the left bank for boaters to launch upstream from the dam.
    - 3) This area is unique because the county road is maintained year-round, allowing year-round public access to Corps facilities.
    - 4) Educating the public through interpretation reduces water-related accidents, serves to improve compliance with no trespassing on private property along the lakeshore, and alerts users to the potential for fire.
  - c. Development and Management Actions.
    - 1) Keep the public away from equipment during debris removal.
    - 2) Plow access roads during winter.
    - 3) Provide and upgrade facilities, services, and interpretive exhibits and materials as needed.
    - 4) Perform weed control as needed.
  - d. Major Constraints. None.



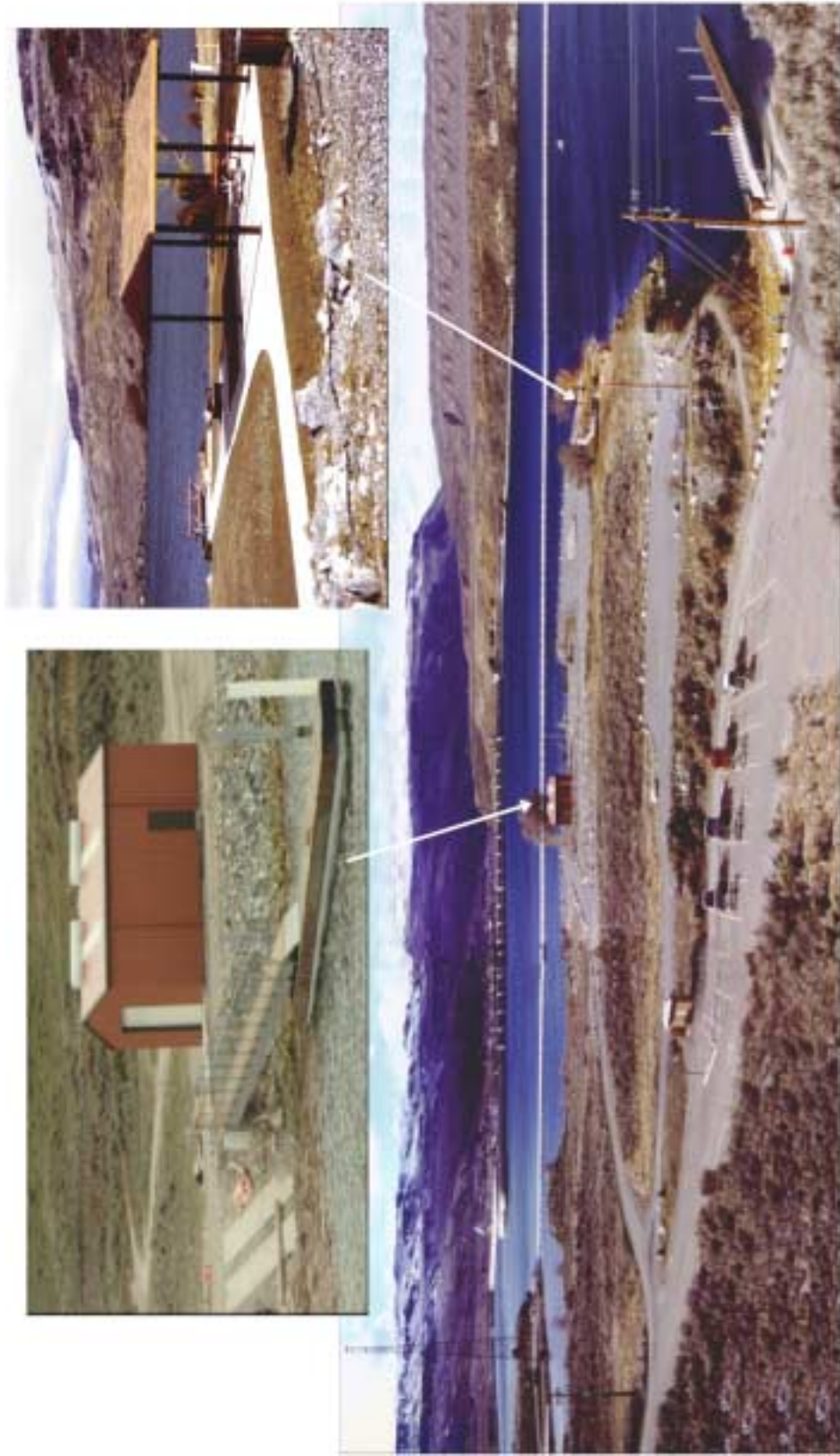
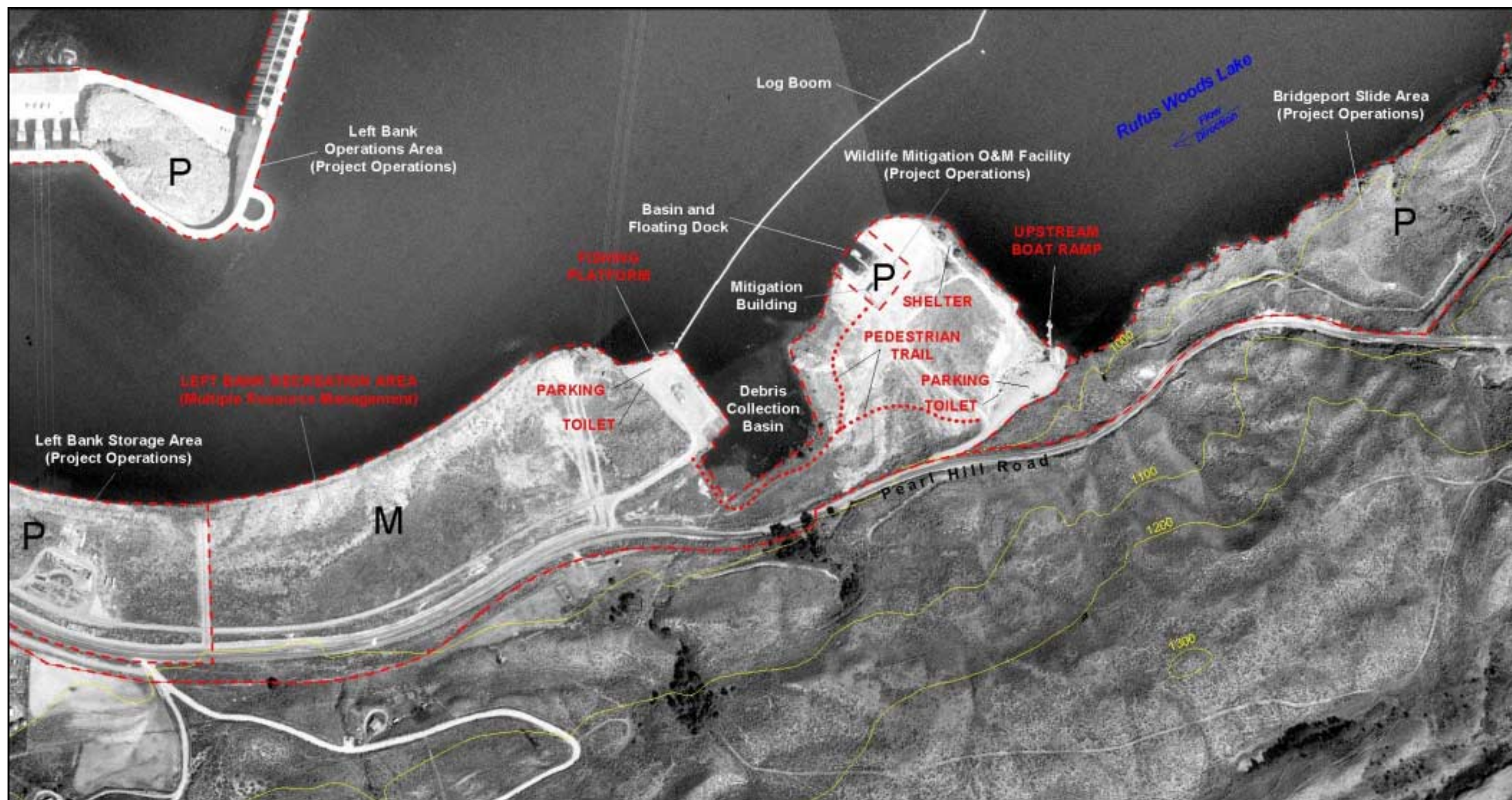






Photo 7-1: Left bank recreation area showing (L to R) powerline transmission tower, debris collection basin, log boom, Chief Joseph Dam (background), vault toilet (foreground), wildlife mitigation O&M facility (insert), parking areas, picnic and sun shelter (insert), and upstream boat ramp. March 5, 1999.





  
 200 0 200 400 Feet  
 Scale = 1:4800; 1 inch = 400 feet  
 aerial base 8/12/93; CADD drawing 3/98

 Corps Fee Boundary  
 Land Classification Boundaries  
 50-foot contours

# Chief Joseph Dam Master Plan LEFT BANK RECREATION AREA



Plate 7-1

DFF 07/28/00



7.2.2 Brandt's Landing (22.4 acres). Located on the left bank of Rufus Woods Lake (looking downstream) at RM 551, this site was acquired from private ownership during the 1981 pool raise. The intent was to develop it for camping and day use as well as for passive wildlife management. Its natural amenities lend it to public recreational use and environmental education opportunities. Presently, only the following improvements have been made: establishment of three parking areas to handle the increased use by anglers, realignment and resurfacing of the road, and installation of an information kiosk. During summer 2001, a vault toilet, fire ring, and a more level access area was provided to the shoreline for anglers with disabilities. The majority of the site has been managed for passive wildlife habitat. See Plate 4-1 for its location. Photo 7-2 below and Plate 7-2 provide an area overview.



**Photo 7-2: Brandt's landing at RM 551 on the left bank. March 1999.**

The lakeshore is planted with pine, olive, and poplar trees providing shade and windbreaks. Brandt's Landing is the higher priority for development of the two proposed day use areas due to good road access via Pearl Hill Road and Douglas County's Highland Orchard Road, close proximity to Bridgeport State Park (3.5 miles by boat), and the existence of tree cover. An unimproved county road continues through the site parallel to Rufus Woods Lake and must remain open. A small section of the shoreline is county-owned land designated as Brandt's Landing Dedicated Public Area. This public area was in place prior to the Brandt's Landing acquisition and does not affect the management or use of the area. In 2001, the Corps' property boundaries were identified and boundary monuments were posted to prevent trespass onto adjacent private property. Boundary fencing has been



installed. Recreational use of Brandt's Landing includes fishing, swimming, picnicking, hunting, and small craft boat launching. Camping is not permitted.

a. Resource Objectives.

- 1) To continue passive wildlife management.
- 2) To accommodate low density day use.
- 3) To educate the public about fire danger.
- 4) To provide for environmental educational opportunities.

b. Rationale.

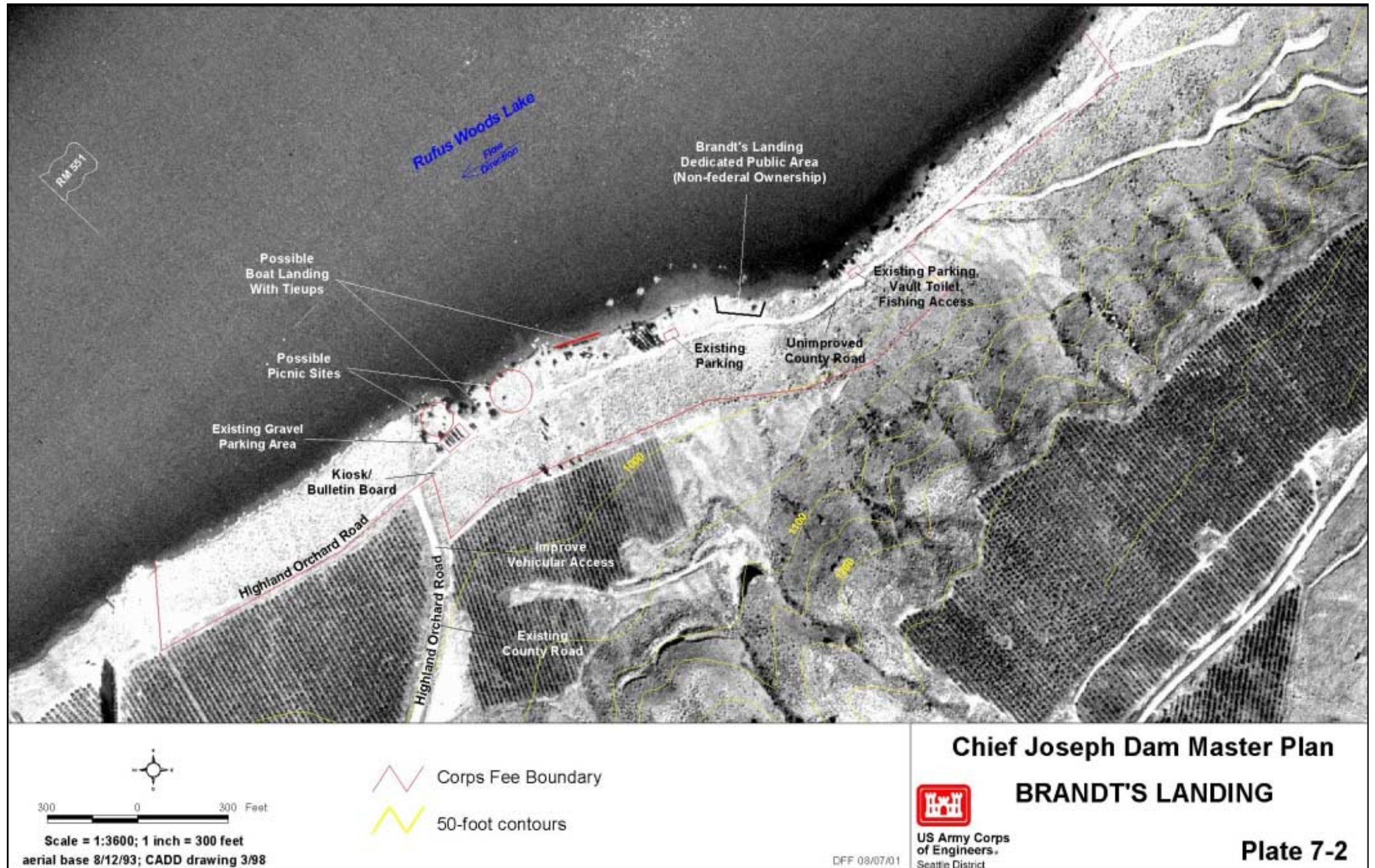
- 1) Modest, low maintenance public use compliments the water-based use of Bridgeport State Park, compliments the proposed development of Rocky Flats at RM 558, and provides an alternate public day use facility between the state park at RM 547.6 and the Seaton's Grove boat ramp at RM 590.
- 2) Adjoining landowners fear a fire could spread to crop fields and livestock grazing areas.
- 3) The natural amenities of this site foster outdoor environmental educational activities.

c. Development and Management Actions.

- 1) Perform passive wildlife management.
- 2) Perform weed control as needed.
- 3) Plant additional drought tolerant trees for shade and wind control.
- 4) Upgrade the access road.
- 5) Provide suitable areas for picnic tables.
- 6) Provide sanitary facilities and fire rings or grates.
- 7) Develop a small shoreline boat landing area with tie-ups.
- 8) Post appropriate signage about site usage and fire danger.
- 9) Present environmental education to school groups.

d. Major Constraints. None.







**7.2.3 Rocky Flats (8.6 acres).** This site is located on the left bank of Rufus Woods Lake (looking downstream) at RM 558 and is boat accessible only. Originally, Rocky Flats was part of the much larger Box Canyon development proposed for low density and intensive recreation use.<sup>1</sup> However, construction was deferred due to development costs, landowner concerns, environmental impacts and safety, O&M arrangements, and declining visitation projections.<sup>2</sup> Current usage is limited due to the rocky shoreline and difficult boat access. Rocky Flats is BLM land and has been withdrawn from public domain for use by the Corps of Engineers and the public (refer to Section 2.7 for an explanation of public domain lands). Up to 8.6 acres may be developed. Management actions include weed control, litter pick-up, cattle exclusion, and limited planting.

Increased public use of the area, such as boat landing, picnicking, camping, and campfires, is causing sanitation and fire safety concerns for adjacent property owners. A proposal has been made to the BLM to install a composting toilet and a few campsites with fire rings to address sanitation problems, environmental concerns, and fire hazards. However, Pack In - Pack Out has been standard policy for all primitive Corps sites. To comply with Sections 106 and 110 of the National Historic Preservation Act, the Corps is consulting with the CCT to address their concerns. Pending resolution of the issues, the Corps will coordinate with the BLM on area improvements. See Plate 4-1 for the location. Photo 7-3 below and Plate 7-3 provide an area overview.



**Photo 7-3: Rocky Flats at RM 558 showing a possible boat landing area. July 16, 1996.**

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<sup>1</sup> U.S. Army Corps of Engineers, *Public Use Development Plan, Design Memorandum 33C* (Seattle District, July 1975), pp. 3-2, 8-10.

<sup>2</sup> U.S. Army Corps of Engineers, *Public Use Development Plan, Design Memorandum 33C Supplement 1* (Seattle District, April 1978), pp. 3-2.

Tall sagebrush and large rocks provide privacy for picnickers and primitive camping. A rock bluff near the back edge of the site provides a view of the surrounding landscape. Directly across the river is a cattle feedlot. A calving ground for over 1,000 cattle is actively used from September through April. The remainder of the year the area is farmed.

a. Resource Objectives.

- 1) To continue passive wildlife management.
- 2) To accommodate low density recreational use.
- 3) To educate the public about fire danger.

b. Rationale.

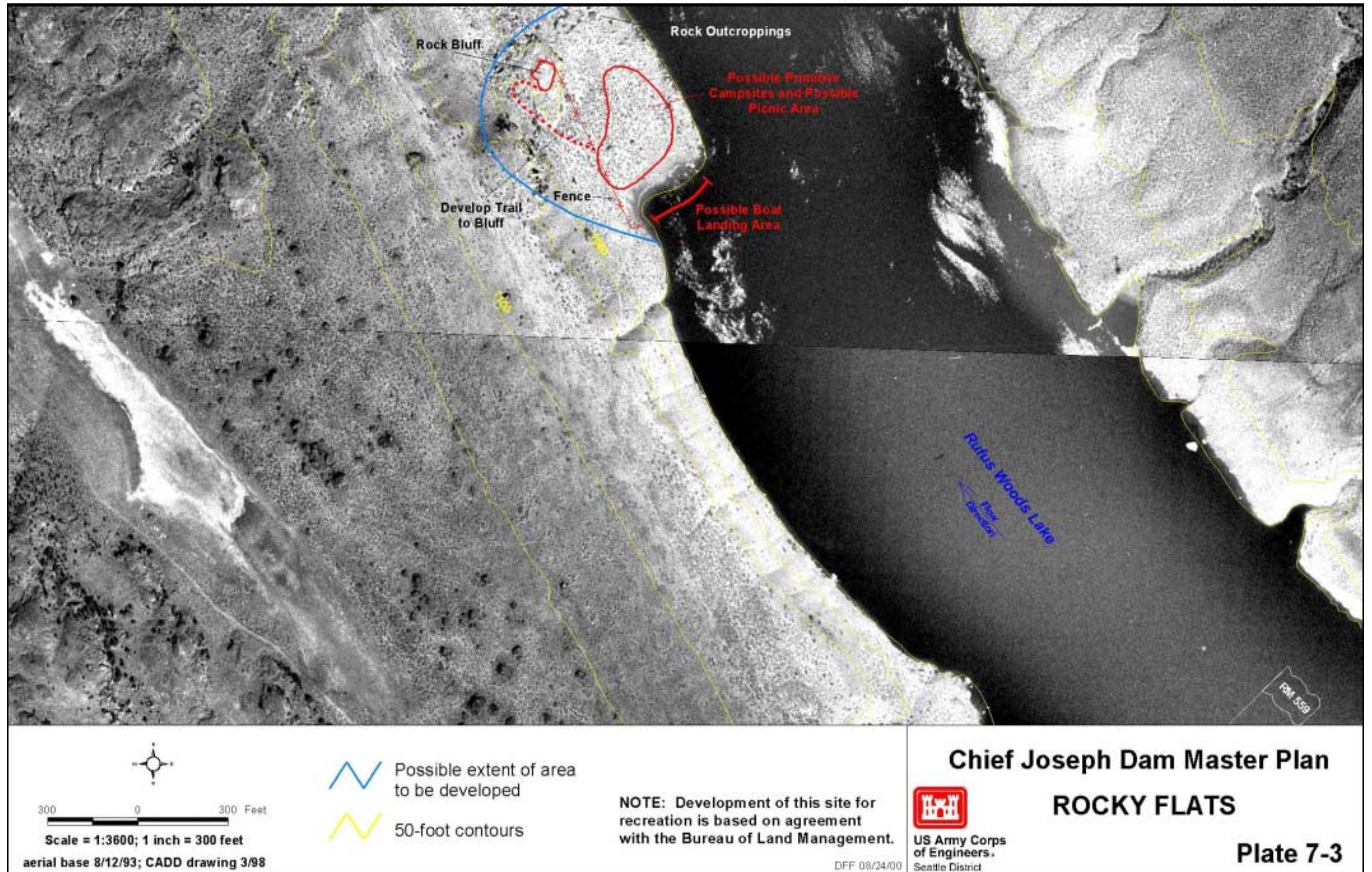
- 1) Modest, low maintenance public use compliments the water-based use of Bridgeport State Park, compliments the proposed development of Brandt's Landing at RM 551, and provides an alternate public use facility between the state park at RM 547.6 and the Seaton's Grove boat ramp at RM 590.
- 2) Adjoining landowners fear a fire could spread to crop fields and livestock grazing areas.

c. Development and Management Actions.

- 1) Perform passive wildlife management.
- 2) Identify Corps and public domain property boundaries and post boundary monuments to prevent trespass onto adjacent private property.
- 3) Perform weed control as needed.
- 4) Plant additional drought tolerant trees.
- 5) Develop a trail to the bluff viewpoint.
- 6) Establish suitable areas for a few primitive campsites.
- 7) Provide suitable areas for picnic tables.
- 8) Provide sanitary facilities and fire rings or grates.

- 9) Develop a small shoreline boat landing area with tie-ups.
  - 10) Post appropriate signage concerning site usage and fire danger.
- d. Major Constraints. None







## 7.3 WILDLIFE AND VEGETATIVE MANAGEMENT AREAS

7.3.1 General. Four areas are managed for wildlife and vegetation—the left and right bank wildlife management areas, RM 548, and RM 564 (Alec Canyon). The goal of vegetation management is to enhance wildlife habitat. Ecological-based management plays a key role, such as noxious weed control, artificial nesting structures, and road elimination. These areas, therefore, are not separated for the purpose of only vegetation or only wildlife management.

7.3.2 Left Bank Wildlife Management Area (133.3 acres). This area consists of two noncontiguous parcels north and east of SR 17 adjacent to Chief Joseph Dam. The left bank operation area separates these two parcels. Prior to 1988, a third parcel of 14.53 acres south of the high voltage powerlines was reported to GSA as excess to project needs. It was conveyed by GSA in 1991 to the former Washington State Department of Wildlife (now WDFW). Refer to Plate 4-2 and Photo 5-5 for the location of this area. Photo 7-4 below shows a ground view of the area.



**Photo 7-4: Left bank wildlife management area downstream from the dam. March 2000.**

The first parcel (22.4 acres) is bordered on the north by Rufus Woods Lake, on the east by the left bank operation area, and on the south and west by SR 17. Pearl Hill Road bisects this parcel. The area above Pearl Hill Road has not been modified and includes native grasses and shrubs. The area below Pearl Hill Road was leveled in 1987 and 1988 to allow seeding of grasses to compete with noxious weeds. All seeded grasses were tolerant of herbicides used for noxious weed control. Irrigation was provided through an aboveground system. In 1999 the irrigation system was buried.

The second parcel (110.9 acres) surrounds Foster Creek and is bordered on the north by Pearl Hill Road, on the east by the Corps' boundary, on the south by SR 17, and on the west by the left bank operation area. The south viewpoint occupies the southwest corner, but is not managed as part of the wildlife area. A small parcel of private land punctuates the area just north

of the high voltage powerlines. Vegetation includes native grasses, shrubs, sagebrush and rabbitbrush on gravelly soil, and riparian species such as cattails, dogwood and willows less than 15 feet in height, which encompass about 50 percent of the riparian vegetation. This diverse mix of vegetation makes the area valuable to many species of wildlife. Mule deer travel along Foster Creek to feed on the willows and drink from the creek. Many birds make use of this area, including California quail, ring-necked pheasants, mourning doves, western meadowlark, killdeer, other songbirds and ducks. The drainage area supports cottontail rabbits, yellowbellied marmots, beavers, coyote, and snakes.

a. Resource Objectives.

- 1) To continue restoration of wildlife habitats to increase diversity and quality.
- 2) To maintain and protect habitats for existing resident and migratory game and non-game wildlife species.
- 3) To control noxious weeds and other undesirable weed species.
- 4) To provide environmental educational use of the area.

b. Rationale.

- 1) The left bank wildlife management area provides an opportunity to increase species richness.
- 2) Foster Creek is a valuable environmental education location for school groups interested in riparian habitat and aquatic invertebrates. These characteristics are unique to this location on Chief Joseph Dam fee lands.

c. Development and Management Actions.

- 1) Plant drought tolerant native vegetation on bare areas prone to erosion.
- 2) Plant native riparian vegetation along Foster Creek.
- 3) Perform weed control as needed.
- 4) Allow supervised environmental educational use of the area.

d. Major Constraints. None.



7.3.3 Right Bank Wildlife Management Area (330.2 acres). This area covers large portions of the north shoreline between SR 17 to the west and Bridgeport State Park to the east, up to the Corps' north boundary and down to Rufus Woods Lake. Vegetation includes dryland grasses, sagebrush, bitterbrush, and other drought tolerant plant species as well as noxious weeds (toadflax, knapweed, kochia, thistle). This area can provide suitable habitat for wildlife species supported by a sagebrush-bitterbrush steppe community. There is limited riparian vegetation. See Plate 4-2 and Photo 5-4 for the location of this area.

In 1991, 24 acres around the visitor orientation area were leveled, seeded with grasses that out-compete noxious weeds, and irrigated with an aboveground system. In 1999 most of the irrigation system was buried with the remaining buried in 2000.

In 1999 and 2000, the recreation and natural resource management section at Chief Joseph Dam designed and coordinated the construction of the north shore trail for pedestrians and bicyclists. This 2.3-mile-long asphalt trail is 8 feet wide and begins at the Dunes Trailhead parking lot located at the Corps' north boundary adjacent to Bridgeport State Park's west boundary. It continues along the spillway access road to the Tower Trailhead parking lot by the right bank staging area. Here the trail separates into two extensions—one continuing to the spillway viewpoint, and one continuing to the viewing platform of the visitor orientation area. Because of the existing terrain, the entire trail meets varying degrees of ADA Accessibility Standards ranging from easier-to-moderate to difficult or most difficult. Photo 7-5 displays the entire trail with rest areas and parking lots.

Future trail construction includes coordination between the Corps of Engineers and the Washington State Parks and Recreation Commission to connect the Dunes Trailhead with Bridgeport State Park. Likewise, discussions have been initiated between the Corps, the city of Bridgeport, and the WSDOT to continue the trail from the visitor orientation area to Bridgeport via the Columbia River bridge (SR 17).

a. Resource Objectives.

- 1) To continue restoration of wildlife habitats and provide for species diversity.
- 2) To maintain and protect habitats for existing resident and migratory game and non-game wildlife species.
- 3) To control noxious weeds and undesirable weed species.

- 4) To provide some public use of the area.
- b. Rationale.
    - 1) The right bank wildlife management area provides an opportunity to increase species diversity and quality.
    - 2) Public use compliments Bridgeport State Park amenities.
  - c. Development and Management Actions.
    - 1) Plant drought tolerant native vegetation on areas prone to erosion.
    - 2) Perform weed control as needed.
    - 3) When approved, extend the north shore trail to the city of Bridgeport and to Bridgeport State Park.
  - d. Major Constraints. None.



Photo 7-5: The north shore trail provides 18 rest areas to meet ADA Accessibility Standards and 5 parking lots for trail access. Inserts top clockwise: rest area 10, Dunes Trailhead, rest area 15. Aerial June 4, 2000; inserts October 3,

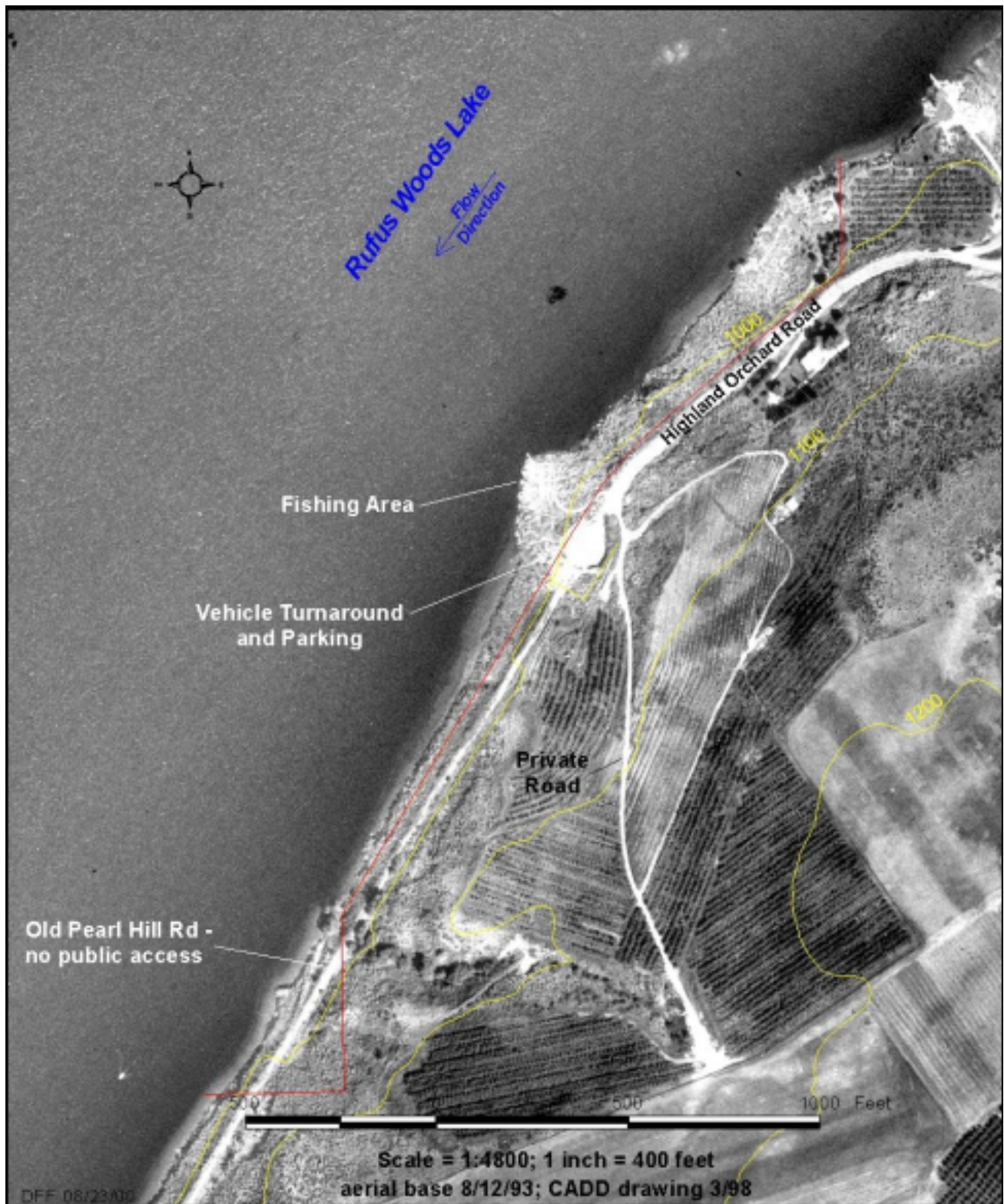
7.3.4 River Mile 548 (7.5 acres). This site is located on the left bank of Rufus Woods Lake upstream from the Bridgeport Slide Area. Vehicle access is from Highland Orchard Road off Pearl Hill Road. River mile 548 is a long narrow corridor with a moderately steep slope vegetated with sagebrush and occasional bitterbrush, rabbitbrush, and shoreline willows. An orchard with deer-proof fencing is directly adjacent upslope from the site and effectively restricts deer from easy access to the site. Non-game birds use the area as a movement corridor along the shoreline and for cover during severe winters. See Plate 4-1 for the location. Photo 7-6 and Plate 7-4 provide overviews.



**Photo 7-6: River mile 548. Considerable public fishing from a rocky point of Corps fee land that extends into deep, weed-free water has resulted in a walking trail between the vehicle turnaround at the east end of the abandoned portion of Old Pearl Hill Road and a privately-owned pump located on the point. This, however, has not developed into any conflict with the pump's current landowner. January 2001.**

- a. Resource Objectives.
  - 1) To continue passive wildlife management.
  - 2) To allow low density day use that does not impact wildlife management, the natural resource, or current landowner.
- b. Rationale.
  - 1) Passive wildlife management is the best use for this site.
  - 2) Public use of the area does not interfere with wildlife use.
- c. Development and Management Actions.
  - 1) Improve the trail to the fishing area as needed.
  - 2) Perform weed control as needed.
- d. Major Constraints. None.





## Chief Joseph Dam Master Plan

**RIVER MILE 548**



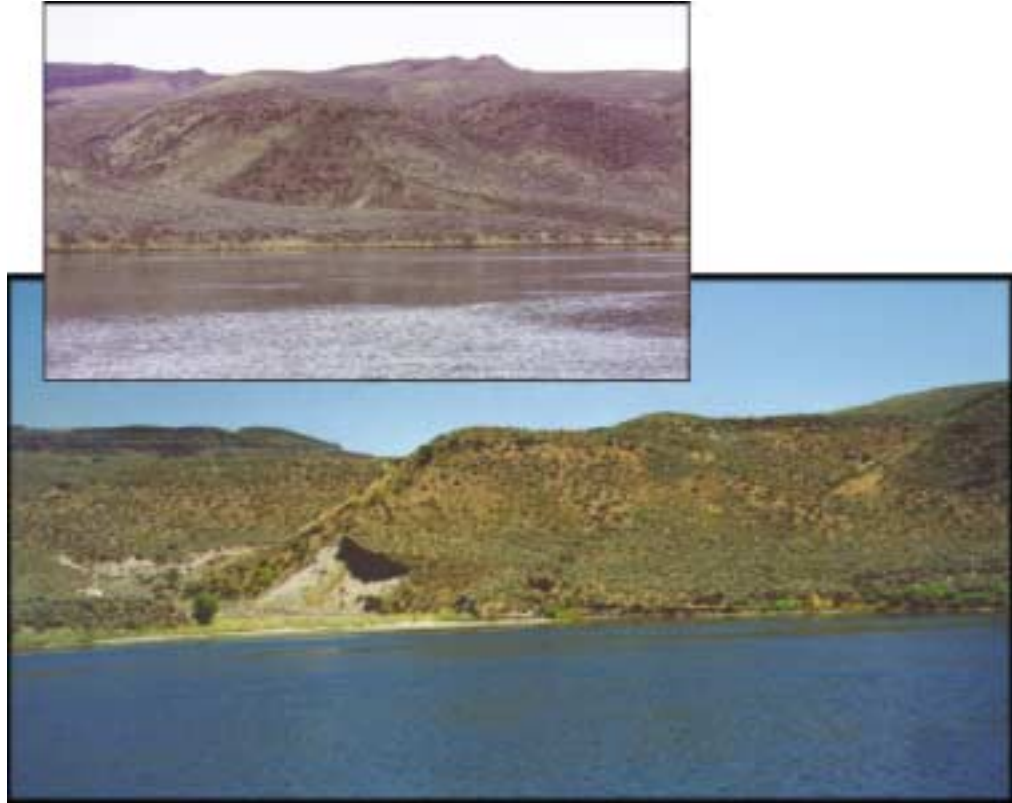
US Army Corps  
of Engineers.  
Seattle District



Corps Fee Boundary

**Plate 7-4**

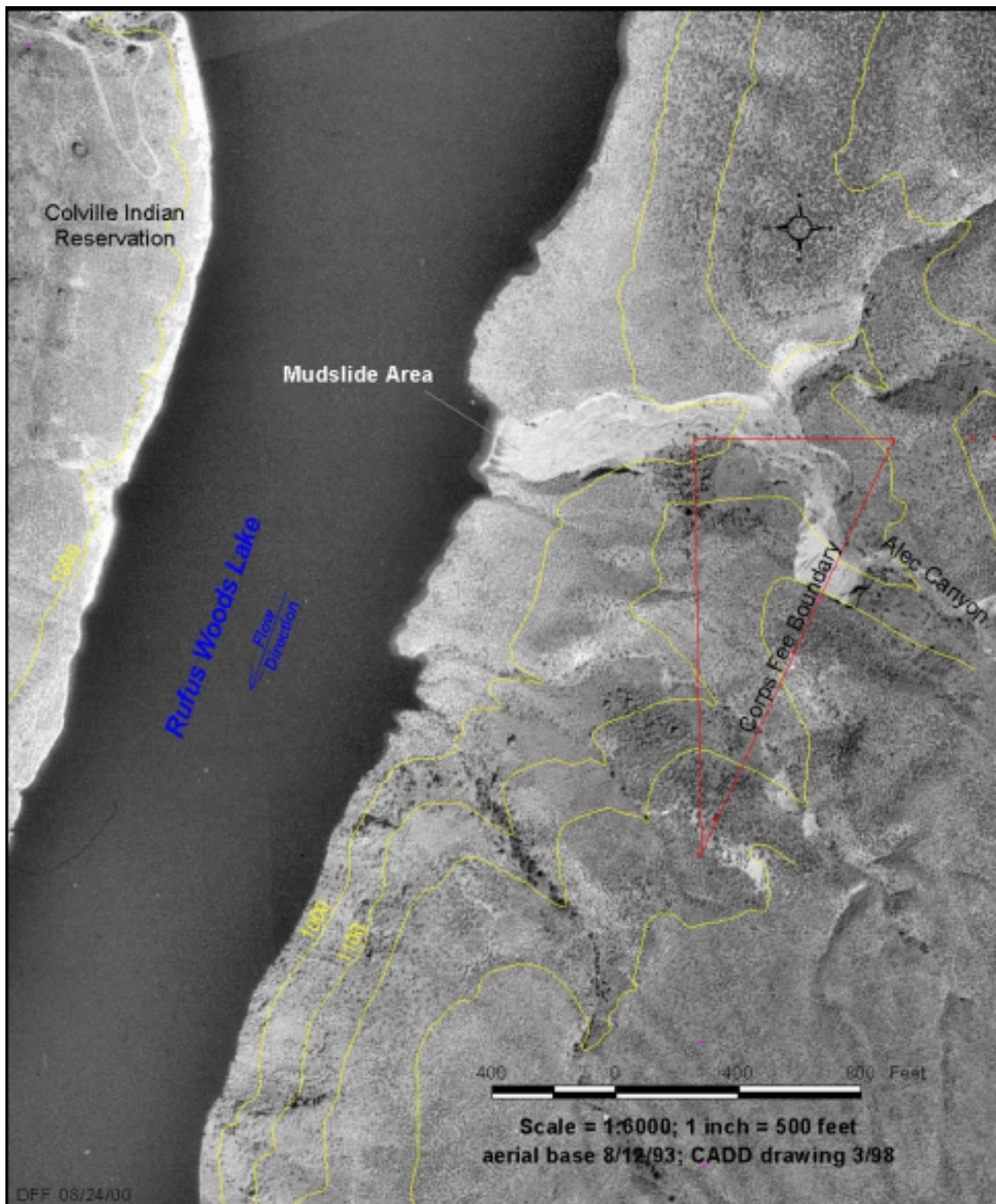
**7.3.5 River Mile 564: Alec Canyon (10 acres).** This site is on a high plateau above Rufus Woods Lake, providing a sweeping view of the surrounding landscape. Because of poor water access, uneven terrain, and a potential for flash flooding in Alec Canyon, this site has low operational value for Chief Joseph Dam. It is primarily covered with grasses and sagebrush and does not provide a particularly suitable habitat for most species of wildlife of the shrub-steppe community. Some species such as western meadowlark and other nongame birds find this a productive habitat. See Plate 4-1 for the location. Photo 7-7 below and Plate 7-5 provides an area overview.



**Photo 7-7: Alec Canyon at river mile 564. Past overgrazing has resulted in loss of some native grass species, replaced with noxious weeds. July 16, 1999, March 1999 (insert).**

- a. Resource Objectives.
  - 1) To continue passive wildlife management.
  - 2) To control noxious weeds and undesirable weed species.
- b. Rationale. Passive wildlife management provides the highest and best use of this site. Cost of excessing the land exceeds maintenance.
- c. Development and Management Action. Perform weed control.
- d. Major Constraints. None.





## Chief Joseph Dam Master Plan RIVER MILE 564: ALEC CANYON



US Army Corps  
of Engineers.  
Seattle District



Corps Fee Boundary

**Plate 7-5**

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## **SECTION 8**

### **OPERATIONS: ENVIRONMENTALLY SENSITIVE AREAS**



## **SECTION 8 - OPERATIONS: ENVIRONMENTALLY SENSITIVE AREAS**

### **8.1 GENERAL**

Section 8 describes Operations lands that are environmentally fragile where scientific, ecological, cultural or aesthetic features have been identified. Use of these lands is restricted to activities compatible with preservation, which is generally limited or no development for public use.

Only one area, Nespelem, has been identified under this category and is described below, including its resource objectives and rationale, development and management actions, and identification of major constraints to its current or future resource use, development, and management.

### **8.2 NESPELEM**

8.2.1 Description. The Nespelem site is located on the right bank of Rufus Woods Lake (looking downstream) at the mouth of the Nespelem River at RM 583. Refer to Plate 4-1 for the location, and Plate 8-1 for an area overview and Corps real estate track numbers. It lies within the boundaries of the Colville Indian Reservation and was acquired by the Corps in 1964 for potential recreation development. The Corps holds a total of 45.2 acres in fee title of which 37.6 acres are above pool elevation 956 feet. The site is environmentally sensitive as it contains an important National Register-eligible archaeological site, 45-OK-20, which is being preserved in place; there is also a prehistoric burial site within the tract.

A high bluff characterizes the left bank of the Nespelem River while the right bank is relatively flat rangeland (see Photo 8-1). Fringe areas along the shore are owned in fee by the Colville Confederated Tribes; these lands are encumbered by flowage easements. A new boundary fence was constructed in 1996. In 1998, noxious weed control efforts were implemented, including mowing and herbicide application.

A dirt boat ramp is located on CCT property next to Corps land. It is usable only at certain pool levels and only with small boats. The Nespelem site is used by hunters and shore anglers, and for small boat launching. Vehicle access is from the Columbia River Road (Okanogan County Road 3280) across Colville Indian Reservation land of which the Corps holds an access easement. A pump and waterline providing water for the adjacent CCT nursery crosses the lower bench. A waterline providing water for adjacent private land crosses the upper bench.



**Photo 8-1: Mouth of the Nespalem River at river mile 583. July 16, 1999.**

**8.2.2 Resource Objectives.**

- a. To continue passive wildlife management.
- b. To protect and manage the cultural resources within the site.

**8.2.3 Rationale.**

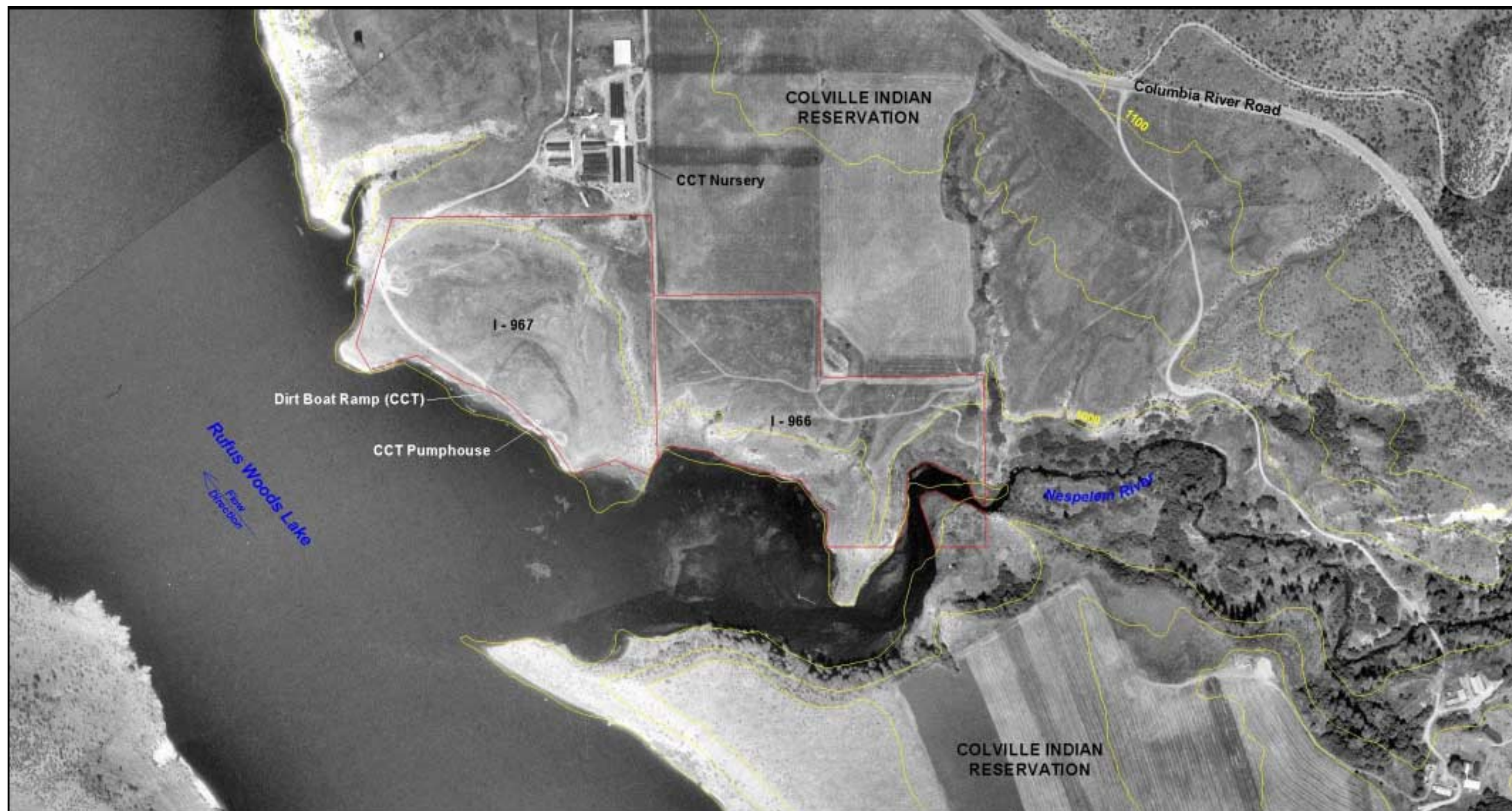
- a. This area includes critical shoreline habitat and access to adjacent riparian habitat on private land.
- b. Protection of significant cultural resources for future generations is provided for in Sections 106 and 110 of the National Historic Preservation Act.
- c. Protection of tribal cemeteries within Chief Joseph Dam property is provided for in Title 2, Section 208 of the Water Resources Development Act of 2000 (S. 2796 - Reburial and Conveyance Authority).

**8.2.4 Development and Management Actions.**

- a. Perform weed control as needed.
- b. Perform periodic trash collection.
- c. Inspect stabilized cultural resource sites regularly and repair protection as needed.

**8.2.5 Major Constraints. None.**





300 0 300 600 Feet

Scale = 1:4800; 1 inch = 400 feet  
aerial base 8/12/93; CADD drawing 3/98

Corps Fee Boundary

50-foot contours

## Chief Joseph Dam Master Plan

### NESPELEM



US Army Corps  
of Engineers.  
Seattle District

### Plate 8-1

DIFF 08/24/00

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## **SECTION 9**

### **OPERATIONS: MITIGATION**



## SECTION 9 - OPERATIONS: MITIGATION

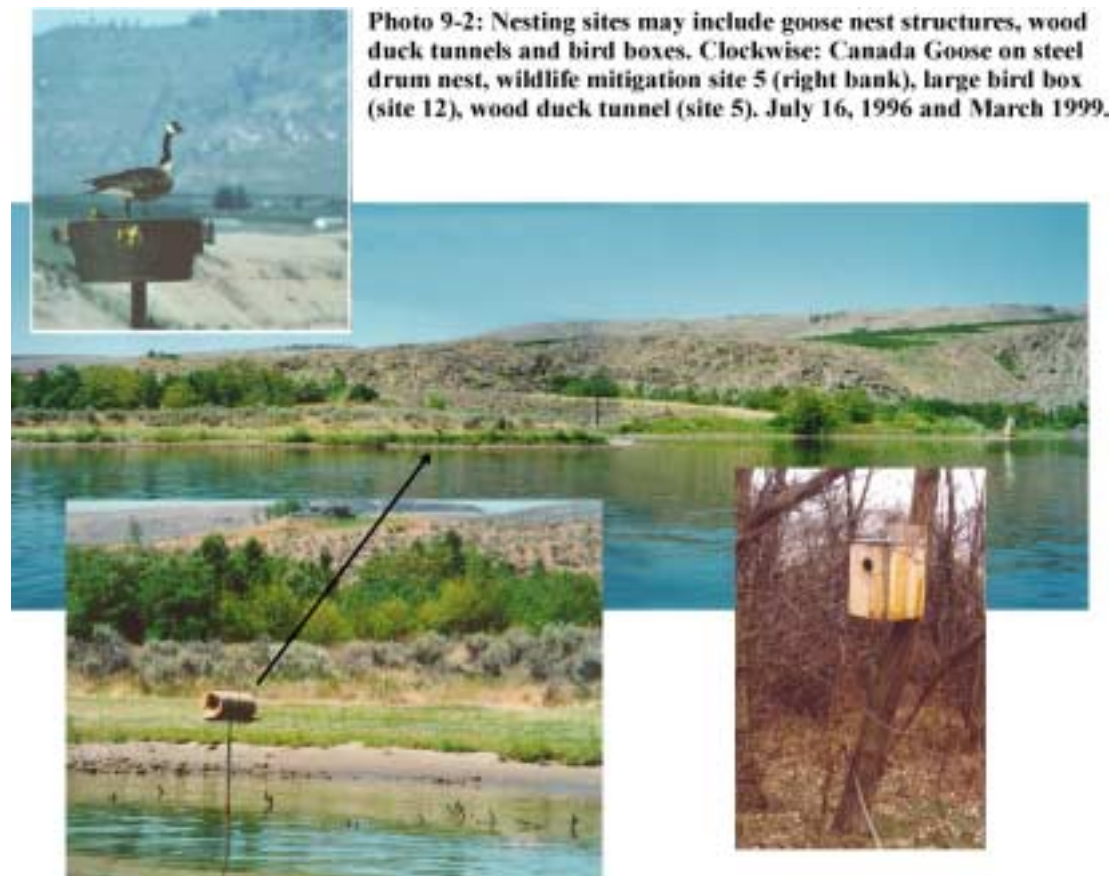
### 9.1 GENERAL

Mitigation lands in this section include only those Operations lands acquired or designated specifically for mitigation purposes. Sixteen wildlife mitigation sites, totaling 2,753.29 acres above and below full pool, have been identified under this classification and are described below in Section 9.3. Refer to Plate 4-1 for the location of each wildlife site. Resource objectives and rationale, development and management actions, and identification of major constraints to its current or future resource use, development, and management are also included following the description.



A wildlife mitigation program for Chief Joseph Dam and Rufus Woods Lake was approved January 5, 1981, to preserve habitat for threatened species and to mitigate wildlife losses resulting from the February 1981 ten-foot raise in the water level of Rufus Woods Lake. The program's goal was to replace all inundated habitats, including riparian (shoreline) habitat along the left and right banks of Rufus Woods Lake, that were destroyed by the pool raise in 1981. It was developed in accordance with *Design Memorandum 52: Wildlife and Threatened Species Mitigation*.<sup>1</sup>

In 1983, the program began with the initial planting and irrigation of the mitigation sites. These activities were coordinated between the Chief Joseph Dam's recreation and natural resource management section and an O&M contractor. Operation and maintenance procedures and instructions are described in the August 1985 *Wildlife Mitigation Program Operation and Maintenance Manual*.



<sup>1</sup> U.S. Army Corps of Engineers, *Chief Joseph Dam Additional Units, Columbia River, Washington, Wildlife and Threatened Species Mitigation, Design Memorandum 52* (Seattle District, October 1980), 11 sections plus appendices and plates.

Wildlife mitigation sites consist of fee, easement, and public domain real estate interests (see Table 9-2 for acreage). Easement property for mitigation sites were acquired for flowage easement and contain terms and conditions that allow the Corps to utilize the land for wildlife mitigation purposes. Section 10.2 discusses flowage easements in more detail. Mitigation methods included the installation of livestock exclusion fences in selected areas, installation of irrigation systems, planting of desirable shrub and tree species to replace habitat lost to the 1981 pool raise, installation of goose nest structures and raptor poles in strategic locations, construction of goose islands and goose brooding pastures, and maintaining trees along the lake shoreline within the area to be flooded (see Photos 9-1 and 9-2). Some of these major features are displayed in Table 9-1 below.

A five-year study of mule deer populations, including their movements and habitat use, was included in the wildlife mitigation program (described below in Section 9.2 in more detail). The bald eagle, a threatened species, was also considered and would benefit from the program's implementation. However, the wildlife mitigation program was intended only to maintain the status quo for wintering bald eagle use and is was not intended as enhancement.

<b>CHIEF JOSEPH DAM MITIGATION MEASURES</b>							
<b>Site No.</b>	<b>River Mile</b>	<b>Irrigated; Pump size</b>	<b>Fencing</b>	<b>Raptor Poles</b>	<b>Goose Nesting Structures</b>	<b>Goose Islands</b>	<b>Goose Pastures</b>
<b>1</b>	551.8	Yes; 20 hp	Yes	1	2	No	No
<b>2</b>	548	No	No	–	2	No	No
<b>3</b>	547.8	Yes; 40 hp	Yes	3	7	No	No
<b>5</b>	553.2	Yes; 40 hp	Yes	3	3	No	Yes
<b>6</b>	554	No	No	8	–	No	No
<b>7</b>	556.5	No	Yes	8	8	No	Yes
<b>8</b>	557.3	No	Yes	–	2	No	No
<b>9</b>	558.2	No	No	6	–	No	No
<b>10</b>	559.3	No	Yes	1	5	Yes	Yes
<b>11</b>	562	Yes; 40 hp	Yes	2	1	No	No
<b>12</b>	565	Yes; 20 hp	Yes	–	2	No	Yes
<b>15</b>	574	Yes; 20 hp	Yes	–	1	No	No
<b>16</b>	575	Yes; 20 hp	Yes	1	3	Yes	Yes
<b>18</b>	585	No	Yes	1	2	No	Yes
<b>19</b>	587.8	No	No	–	2	No	No
<b>20</b>	589.5	No	No	5	–	No	No

**Table 9-1: Wildlife mitigation measures by site. Sites 2 and 19 are islands, Sites 10 and 16 are upland habitat with a manmade island for goose nesting.**



## 9.2 PROGRAM EVALUATION

Independent contractors conducted the five-year mule deer study in two parts from 1982 to 1987. Robert Carson conducted the first half of the study;<sup>2</sup> the second half conducted by Brad Griffith and Peek.<sup>3</sup> Primary objectives of the study were to determine habitat preferences for deer with particular emphasis on use of shrub-steppe (refer to Section 2.12.1 for results of the shrub-steppe study), and any impacts to deer caused by the 1981 ten-foot pool raise.

Design Memorandum 52 stated the Seattle District Corps of Engineers would perform periodic habitat evaluations on the wildlife mitigation sites to determine if the sites were meeting their stated goals. Evaluations were scheduled and have been conducted every five years for a period of 25 years from the date of completion of the mitigation sites. Evaluations were performed by an independent contractor for an objective result. A committee of Corps, CCT and WDFW representatives set the study objectives and reviewed the results. Evaluations occurred from 1987 to 1989 by Shapiro and Associates, from 1993 to 1994 by David Evans and Associates, and in 1999 by Jones and Stokes. The next and final evaluation is scheduled for 2003. However, maintenance of the sites will continue. Copies of these reports are available in the Chief Joseph Dam's recreation and natural resource management section.

Habitat evaluations performed by the contractor required (1) establishment of permanent transects at all 80 irrigation circles and at 30 additional areas representing all of the major habitat types, (2) canopy coverage of grass, forbs, shrubs, and trees on all established transects, (3) utilization monitoring of deer browse on all established transects, (4) mule deer fawn surveys, (5) summer and winter upland game bird surveys, (6) mapping of the major shoreline vegetation communities, (7) preparation of a wildlife observation list of all wildlife observed on or near the wildlife mitigation sites, and (8) recommendations for continuing the wildlife mitigation program. Overall, the results of the two evaluations indicate the wildlife mitigation sites are meeting their stated objectives.

A wintering eagle survey is conducted annually in January. The same route is followed that was established by the WDFW during the early 1980's. Areas that are visible from the Columbia River from RM 545 to RM 597 are surveyed with the location, species, and age of all observed wintering eagles documented. The information is forwarded to the WDFW. One golden eagle nest and six bald eagle nests on Rufus Woods Lake are also monitored; the information is added to the WDFW eagle nesting database. Additionally, 49 raptor perching poles, many of

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<sup>2</sup> Robert Carson, "Mule Deer Habitat Selection and Movement Patterns in North Central Washington," (University of Idaho, Moscow, 1985), 116 pp.

<sup>3</sup> Originating report has not been recovered but may be related to the following report: B. Youtie, B. Griffith, J. Peek, "Successional Patterns in Bitterbrush Habitat Types and Their Relationship to Soils and Topography in North-Central Washington" (unpublished manuscript, 1987).

which are heavily used by wintering eagles, are maintained and monitored. At least once yearly, castings from these poles are collected as an informal usage survey.

### 9.3 WILDLIFE MITIGATION SITES

**9.3.1 Description.** The complete wildlife mitigation program includes 16 sites as located on Plate 4-1. In 1977, the Seattle District Corps of Engineers contracted with the former Washington State Department of Game (now the WDFW) to identify and evaluate potential mitigation areas. Both the CCT and the USFWS participated in the evaluation. Thirty-four potential sites were identified of which sixteen were selected for mitigation. Table 9-2 breaks down the various mitigation acreage. Sites are accessible only by boat due to adjoining private property.

CHIEF JOSEPH DAM MITIGATION ACREAGE							
Site No.	River Mile	Total Acreage	Above and Below Full Pool			Fee, Public Domain, and Easement Lands	
			Fee	Public Domain (non-fee)	Flowage Easement (non-fee)	Above Full Pool	Fenced
1	551.8	121.55		121.55		36.15	10.25
2	548	0.01	0.01			0-0.01	
3	547.8	197.37			197.37	64.97	38.70
5	553.2	242.07			242.07	64.23	34.83
6	554	158.10		158.10		96.75	
7	556.5	474.70	121.84	352.86		316.95	195.90
8, 9	557.3, 558.2	251.57			251.57	215.72	16.52
10	559.3	259.68		259.68		132.85	8.48
11	562	119.56		70.23	49.33	80.71	60.95
12	565	80.02			80.02	34.50	29.49
15	574	90.38			90.38	56.40	19.67
16	575	66.96			66.96	16.69	12.70
18	585	421.13			421.13	397.22	397.22
19	587.8	91.63			91.63	≈ 20.00	
20	589.5	178.56			178.56	158.73	
<b>Total Acreage</b>		<b>2,753.29</b>	<b>121.85</b> 36.15 above full pool	<b>962.42</b>	<b>1,669.02</b>	<b>1,691.88</b>	<b>824.71</b>

**Table 9-2: Wildlife mitigation acreage by site. Sites 2 and 19 are islands; sites 10 and 16 are upland habitat with a manmade island for goose nesting. Total acreage is higher than what is actively managed due to lands below the 956-foot surface water elevation.**

#### 9.3.2 Resource Objectives.

- a. To maintain and enhance wildlife habitats on mitigation lands.
- b. To control noxious weeds and other undesirable weed species.
- c. To provide environmental educational opportunities.

#### 9.3.3 Rationale.

- a. The wildlife mitigation program was developed in accordance with DM 52, under the authority of Section 2(g) of the Fish and Wildlife Coordination Act (1958; PL 85-624).
- b. Routine inspections and maintenance provide safe nesting and feeding areas.
- c. Ongoing mitigation provides dynamic teaching opportunities.

#### 9.3.4 Development and Management Actions.

- a. Maintain the 16 wildlife mitigation sites in accordance with the *Wildlife Mitigation Program Operation and Maintenance Manual*. Ongoing evaluations determine appropriate program adjustments.
- b. Coordinate wildlife management activities with the USFWS for endangered or threatened species, as required under the Endangered Species Act of 1973. Refer to Section 2.15, Threatened and Endangered Species, for coordination requirements.
- c. Coordinate and communicate any changes involving the wildlife mitigation program with other appropriate agencies.
- d. Maintain desirable plantings and associated irrigation systems.
- e. Maintain fencing to exclude domestic livestock from grazing.
- f. Maintain raptor poles for perching and nesting.
- g. Maintain goose nest bowls, goose nest islands, and goose feeding pastures to provide safe nesting and feeding areas.
- h. Perform weed control as needed.
- i. Allow supervised environmental educational use of the sites.

#### 9.3.5 Major Constraints. None.

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## **SECTION 10**

### **OPERATIONS: EASEMENT LANDS**

## **SECTION 10 - OPERATIONS: EASEMENT LANDS**

### **10.1 GENERAL**

The Corps of Engineers holds an easement interest for a total of 12,006.70 acres above and below full pool. Most easement acreage at Chief Joseph Dam was acquired for flowage, but easements have also been acquired for project operations. Details on individual easements are available through the real estate office of the Seattle District Corps of Engineers. Descriptions for different types of easements are provided below. Planned use and management of easement lands are in strict accordance with the terms and conditions of individual easement estates acquired for Chief Joseph Dam.

### **10.2 FLOWAGE EASEMENTS**

10.2.1 Description. Terms and conditions for flowage easement estates are specific to individual land tracts. In general, flowage easements were acquired by the Corps from landowners along Rufus Woods Lake to protect the Corps in the event of inundation or sloughage of lands along the lake. The Corps does not own this land but has purchased the right to permanently overflow, flood, or submerge easement lands, and enter the land to remove brush or debris which, in the opinion of the representative of the United States in charge, may be detrimental to the operation of the project.

Flowage easements also allow the Corps the right to prohibit structures being built for human habitation and to approve any structures placed on the property prior to construction. The upslope boundary of the flowage easement is based on geology and property ownership boundaries. Selected flowage easement estates contain terms and conditions for cultural resource protection which allow the Corps, and or the CCT on easement land within the Colville Indian Reservation, to enter the lands for cultural resource survey and collection.

Also, selected flowage easements contain terms and conditions that allow the Corps to utilize the land for wildlife mitigation purposes (1,669.02 acres; refer to Section 9.3 for information on mitigation sites). This latter purpose includes fencing to exclude livestock; planting vegetation for improving wildlife habitat; and installing irrigation systems.

In 1997 and 1999, a formal sensitive, threatened and endangered plant survey was completed on flowage easement lands and Chief Joseph Dam fee lands. A formal breeding bird survey was completed in 1998 on fee lands and on flowage easement lands where there was wildlife easement. Visual and auditory methods were used for the land surveys; visual methods were used

for surveying the water enroute to survey sites. A bat survey was completed during the summer of 2000 on flowage easement and fee lands. In 2001, the USGS completed a fish survey on Rufus Woods Lake. A small mammal, reptile and amphibian survey is contracted for fall 2001 on flowage easement and fee lands.

#### 10.2.2 Resource Objectives.

- a. To continue O&M functions integral to the operation of Chief Joseph Dam in accordance with the easement terms and conditions for each land tract.
- b. To inventory and protect cultural resources located on flowage easement lands.
- c. To identify and protect threatened and endangered species located on flowage easement lands.
- d. To enhance wildlife habitat on selected flowage easement lands that allow for wildlife mitigation.

#### 10.2.3 Rationale.

- a. Flowage easements are required for O&M purposes.
- b. Management of cultural resources on Chief Joseph Dam lands is required under Sections 106 and 110 of the National Historic Preservation Act.
- c. Identifying and protecting threatened and endangered species is required by the Endangered Species Act of 1973.
- d. Enhancing wildlife habitat on selected flowage easement lands is required as part of the wildlife mitigation program.

#### 10.2.4 Development and Management Actions.

- a. Manage easement lands in accordance with the terms and conditions for each land tract.
- b. Conduct a small mammal, reptile and amphibian threatened and endangered species inventory as required under the Endangered Species Act of 1973.



- c. Coordinate wildlife management issues for applicable threatened and endangered species with the USFWS and the NMFS as required under the Endangered Species Act of 1973.
- d. Inventory and evaluate such lands for historic properties, identify project effects on them, and manage them under the provisions of the National Historic Preservation Act.
- e. Coordinate cultural resources activities with the CCT as a requirement of the federal treaty trust responsibilities and Indian consultation requirements of Sections 106 and 110 of the National Historic Preservation Act and the Native American Grave Protection and Repatriation Act (1990).
- f. For easement lands on which the Corps has taken cultural resource rights, the Corps needs to clarify its ability to manage lands to prevent adverse effects on its property by the actions of others. See Section 12.2.3 for HPMP recommendation.
- g. For selected flowage easement lands that allow for wildlife mitigation, conduct actions listed in Section 9.3.4 as appropriate.

10.2.5 Major Constraints. None. Planned use and management of easement lands are in strict accordance with the terms and conditions of individual easement estates acquired for the project.

### **10.3 MISCELLANEOUS EASEMENTS**

10.3.1 Description. The Corps has also acquired various easements for operation purposes. Examples include the railroad siding at Brewster, portions of SR 17 at the Columbia River bridge and Okanogan bridge (see Section 2.7.3, Project Lands Reported as Excess), and the Lake Pateros cable crossing below Bridgeport.

10.3.2 Resource Objective. To continue O&M functions integral to the operation of Chief Joseph Dam and the terms and conditions of each land tract.

10.3.3 Rationale. Easements are required for O&M purposes.

10.3.4 Development and Management Action. Manage easements in accordance with the terms and conditions for each land tract.

10.3.5 Major Constraints. None. Planned use and management of easement lands are in strict accordance with the terms and conditions of individual easement estates acquired for the project.

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## **SECTION 11**

### **DESIGN CRITERIA**

## SECTION 11 - DESIGN CRITERIA

### 11.1 GENERAL

General policies and procedures for the planning, design, operation, and maintenance of recreation facilities at Corps of Engineers civil works projects are provided in the engineer manuals, regulations, and pamphlets listed below. Reference information is provided in this section for applicability to visitor and employee safety and accommodation. Design principles and criteria particularly appropriate to the Chief Joseph Dam and Rufus Woods Lake are discussed in subsequent paragraphs.

ER 200-2-3, *Environmental Compliance Policies*

EP 200-2-3, *Environmental Compliance Guidance and Procedures*

EP 310-1-6, *U.S. Army Corps of Engineers Graphic Standards Manual*

EP 310-1-6a and b, *U.S. Army Corps of Engineers Sign Standards Manual*

ER 1110-2-400, *Design of Recreation Sites, Areas, and Facilities*

ER 1130-2-500, *Partners and Support (Work Management Policies)*

EP 1130-2-500, *Partners and Support (Work Management Guidance and Procedures)*

ER 1130-2-540, *Environmental Stewardship Operations and Maintenance Policies*

EP 1130-2-540, *Environmental Stewardship Recreation Operations and Maintenance Guidance and Procedures*

ER 1130-2-550, *Recreation Operations and Maintenance Policies*

EP 1130-2-550, *Recreation Operations and Maintenance Guidance and Procedures*

ER 1165-2-400, *Recreation Planning, Development, and Management Policies*

*Uniform Federal Accessibility Standard (UFAS)*

*Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)*

*Universal Access to Outdoor Recreation: A Design Guide*, Project Play and Learning In Adaptable Environments, Inc. (PLAE), 1993.

## 11.2 ACCESSIBILITY STANDARDS

As defined in Section 3.7, Americans with Disabilities Act, DOD policy requires all DOD facilities, which includes Corps of Engineers water resources projects such as Chief Joseph Dam, to at least be as accessible as state and local government facilities and public accommodations in the private sector that are subject to the ADAAG. Buildings and facilities shall be designed, constructed and altered to meet or exceed the UFAS and the ADAAG, which the latter was developed by the U.S. Architectural and Transportation Barriers Compliance Board (Access Board), of which the DOD is a member. For existing buildings and facilities, physical barriers to entering and using the facilities must be removed when readily achievable. The ADA requirements may be summarized as follows. (1) Remove architectural and structural barriers in existing facilities where readily achievable. Readily achievable means easily accomplishable and able to be carried out without undue difficulty or expense. (2) Provide readily achievable alternative measures when removal of physical barriers is not readily achievable. Legitimate safety requirements may be considered in determining what is readily achievable so long as they are based on actual risks and are necessary for safe operation. (3) Maintain accessible features and equipment. (4) Design and construct new facilities and, when undertaking alterations, alter existing facilities in accordance with the ADAAG.

It is the Corps' policy to incorporate accessibility considerations in all planning, design, new construction, and renovation activity at water resources projects. As part of this effort, a survey to identify architectural barriers at project facilities was conducted by the Corps in 1994. Findings of the survey were reported in the *Chief Joseph Dam Project Americans With Disabilities Act Evaluation*, June 1995, and is available in the recreation and natural resource management section at Chief Joseph Dam. The survey was followed with an ADA implementation plan that outlined costs and time schedules to accomplish ADA requirements.

The UFAS and ADAAG address the constructed or "built" environment. Presently, there are no definitive, legally enforceable guidelines for outdoor recreation areas and facilities (e.g. campgrounds, paths, picnic areas, boating and swimming areas, play areas and fishing facilities). The Access Board has established a regulatory negotiation committee to develop a proposed rule on accessibility guidelines for newly constructed and altered outdoor developed areas covered by the Americans with Disabilities Act and the Architectural Barriers Act, as amended (42 USC 4151-4157). Until these guidelines are completed, a reference document entitled *Universal Access to Outdoor Recreation: A Design Guide (Design Guide)* may be used to supplement UFAS and ADAAG when designing outdoor recreation areas.

The *Design Guide* was prepared as a cooperative effort among federal land management agencies in 1994 with the U.S. Forest Service as the lead agency. Staff members of the Access Board provided technical assistance. When detailed designs are prepared as part of the OMP for recreational areas and facilities proposed by this master plan, the most up-to-date DOD accessibility policies shall be followed.

### **11.3 SUSTAINABLE DESIGN DEVELOPMENT**

To comply with “greening the government” Executive Orders (EO), sustainable design and development criteria shall be used for building and site construction whenever possible.<sup>1</sup> A wide range of resources is available on sustainable design, including the publications listed below. Selected sustainable design development criteria are provided for Section 11 topics that follow.

*Guiding Principles of Sustainable Design*, U.S. Department of Interior, National Park Service, 1993.

*The LEED (Leadership in Energy and Environmental Design) Green Building Reference Guide*<sup>™</sup>, U.S. Green Building Council. A standard that improves environmental and economic performance of commercial buildings.

Engineer Technical Letter (ETL) 1110-3-491, *Engineering and Design – Sustainable Design for Military Facilities*, U.S. Army Corps of Engineers, 2001.

Engineer Research Development Center, Technical Report (ERDC-TR)-01-3, *Planning, Engineering, and Design of Sustainable Facilities and Infrastructure*, U.S. Army Corps of Engineers, 2001.

Sustainable design is defined in ETL 1110-3-491 as: “...the design, construction, operation, and reuse/removal of the built environment (infrastructure and buildings) in an environmentally and energy efficient manner. The major tenet of sustainable design is to meet the needs of the present without compromising the ability of future generations to meet their own needs. Synonymous with Sustainable Design is ‘Green Building.’ Sustainable design includes efficient use of natural resources, better performing, more desirable, and more affordable infrastructure and buildings. Sustainable design incorporates the energy efficiency concerns of the 1970’s with the concerns in the 1990’s related to damage to the natural environment; emissions of greenhouse gases and ozone depleting chemicals; use of limited material resources; management of water as a limited resource; reductions in construction,

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<sup>1</sup> EO 13101, “Greening the Government through Waste Prevention, Recycling, and Federal Acquisition;” EO 13123, “Greening the Government through Efficient Energy Management;” EO 13148, “Greening the Government through Leadership in Environmental Management;” and EO 13149, “Greening the Government through Federal Fleet and Transportation Efficiency.”



demolition and operational waste; indoor environmental quality; and occupant/worker health, productivity and satisfaction.”

#### **11.4 SITE DESIGN**

Detailed information on the site should be obtained before design begins. Conserve existing natural areas and restore damaged areas to provide habitat and promote biodiversity. Facilities shall be sited to blend with the existing landscape rather than compete with it.

Development shall avoid impacts to significant natural and cultural resources. If threatened or endangered species are present and may be affected, further coordination (informal or possibly formal) with the USFWS or the NFMS is required under the Endangered Species Act. Coordination, as appropriate, will also occur with other agencies.

If a planned development would have adverse effects on significant cultural resources, the plan would be modified to avoid such effects. If the plan could not be modified to avoid effects, a site treatment plan might be developed, coordinated and implemented to allow the development to proceed, or the development may be cancelled or moved away from the affected property.

Development footprints (buildings, parking, access roads) should be minimized as much as possible. Only the most adaptable terrain will be used for siting of facilities. Grading for construction of facilities should be minimized. Necessary cuts and fills should blend uniformly with existing natural contours. Their edges should be neatly finished to blend with the natural landform and vegetation. Careful consideration should be given to how and where excess material is to be used. Excess material may often be used to create landforms such as mounds or berms of earth to separate and screen use areas.

Existing vegetation to be preserved should be selected early in the design phase. All vegetation to be preserved shall be fenced off (at a minimum, erect fence along the dripline of vegetation) during construction work. No stockpiling of materials or disturbance to root zones shall be allowed within fenced areas.

Stormwater drainage systems shall be designed to reduce erosion and sedimentation, increase water quality, and recharge ground water supplies by increasing on-site infiltration. Techniques to achieve these goals include providing vegetated bio-swales and retention ponds, maintaining and enhancing existing vegetation, limiting the amount of impervious surface materials, and protecting topsoil during construction. Design recommendations for specific features follow.

#### 11.4.1 Picnic Tables.

- a. New tables must meet accessibility requirements in areas providing universal access.
- b. Benches and table tops should be made of materials comfortable to touch in hot and cold weather and that are appropriate to the setting.
- c. Locate tables in the afternoon shade of existing or proposed trees.
- d. Site picnic tables to be protected from high winds.
- e. Place tables upwind from gravel parking areas.
- f. Anchor tables to avoid theft.

#### 11.4.2 Fire Pits.

- a. New fire rings and grills must meet accessibility requirements in areas providing universal access.
- b. In rural settings, surfacing used under and around fire rings or grills must be tactually distinct from adjacent surfaces to provide a tactile indication that a different element is being approached along the path. In roaded natural settings, it may be more appropriate to use a base of well-compacted, crushed gravel around rings and grills to distinguish between the native soil surface.
- c. Handles on fire rings and grills must be easy to grasp and should not conduct heat.
- d. Locate fire rings or grates downwind from picnic tables.
- e. Stagger location of fire rings or grates and picnic tables so adjacent fire rings or grates do not adversely affect other tables.
- f. Post-mounted grills should rotate to allow for changes in wind direction.

#### 11.4.3 Toilets.

- a. Restrooms in developed settings must comply with all applicable accessibility standards, but should be compatible with the site's recreation setting and overall management direction.

- b. Locate toilets downwind from nearby visitor and picnic facilities.
- c. Site toilet facilities in shade of existing or proposed trees.
- d. Place facilities to avoid visitors passing close to toilets en route to picnic facilities.

#### 11.4.4 Boat Beaching and Tie-up Facilities.

- a. Locate primitive camping sites near boat beaching areas for security and convenience. Coordinate campsite locations with the CCT for minimum shoreline setbacks.
- b. Provide tie-up facilities such as buoys to ensure boat anchoring during reservoir drawdown periods as well as high-flow periods.
- c. Site boat beaching and tie-up areas where shorelines are protected from river currents and prevailing wind.
- d. Provide highly visible markers for approved boat landing areas.

#### 11.4.5 Trash Receptacles.

- a. Provide appropriate signs regarding removal of garbage at primitive recreation sites.
- b. Locate trash receptacles in shady areas away from high-use areas to minimize bee and hornet attraction.
- c. Use containers with well-sealed lids, and anchor to avoid theft.
- d. Provide recycle receptacles for aluminum cans wherever feasible.

#### 11.4.6 Primitive Camping.

- a. Locate campsites in flat, well-drained terrain protected from prevailing winds.
- b. Locate campsites in conjunction with tables and fire pits rings or grills.
- c. Preparation of campsites should consist of minimal vegetation and rock removal.

## **11.5 ACCESS AND CIRCULATION**

Roads, trails, and walks play a major role in establishing the pace and character of a Corps area. Within the Chief Joseph Dam project, the circulation system is particularly obvious due to the openness and slow restorative character of the site. Therefore, each road, trail, and walk should be designed relative to the environment, constituting an enjoyable and informative experience in itself. Minimal trail construction shall be provided at primitive recreation sites for user safety. To reduce stormwater runoff and increase on-site infiltration, use pervious surface materials (gravel, grass pavers, soil cement, etc.) when possible.

Parking areas are part of the circulation system and should be carefully sited and scaled to blend with the natural terrain. Several smaller parking areas are less obtrusive than one large parking area. Parking edges should be physically defined. Planting and naturalistic grading should be used to shade and screen parking areas. When possible, eliminate curbs and use vegetated bio-swales in parking lot islands to increase on-site water infiltration and reduce pollutants. Parking within day use areas should be restricted to designated areas to avoid damage to vegetation and to minimize visual impact on the site. Roads shall be designed for very low speeds (15 miles per hour) with short, curved radii, and should dead end where feasible.

Walks and designated pathways should be designed to provide convenient and safe pedestrian access between site facilities. Topography and existing vegetation should influence siting of walkways where practical, and accessibility requirements for individuals with disabilities shall be met. Asphalt surfaced paths can blend sensitively into natural edges and should be considered in high-use areas.

## **11.6 BUILDINGS AND STRUCTURES**

Optimize the energy performance of buildings by ensuring that fundamental building elements and systems are designed, installed and calibrated to operate as intended. Reduce ozone depletion by specifying only non-chlorofluorocarbon-based refrigerants in all base building heating, ventilation and air conditioning systems.

Encourage the use of renewable technologies to reduce environmental impacts associated with fossil fuel energy use. Consider and use high temperature solar and or geothermal, photovoltaics, wind, biomass (other than unsustainably harvested wood), and bio-gas. Passive solar, solar hot water heating, ground-source heat pumps, and daylighting. Consider collecting rainwater from building roofs for irrigating landscape.

Support optimum health, productivity, and comfort conditions for building occupants. For example, increase daylight and views, reduce noise pollution, provide

a thermally comfortable working environment, increase fresh air ventilation, and avoid exposure to potentially hazardous chemicals that adversely impact air quality.

Use sustainable design criteria when selecting materials and resources. For example, use forest products that are certified in accordance with the Forest Stewardship Council, and products that have incorporated recycled content material. Reduce the use and depletion of finite raw and long cycle renewable materials by replacing them with rapidly renewable materials. Use regionally extracted, harvested, and manufactured building materials.

New structures should be sited to avoid visual competition in the landscape. Architectural treatment should be sensitive to the established architectural style of the buildings around the dam and should be sited to reflect local ground forms and vegetative patterns and surroundings. Increased use of natural colors and earth and landscape screening is recommended. Colors and materials should be consistently used for structures as well as landscape features to aid in establishing the visual unity of Corps sites.

## **11.7 LANDSCAPE ARCHITECTURAL FEATURES**

Design and materials of landscape features, such as shelters, fences, flagpoles, walls, benches, picnic tables, etc., should reflect the character of the natural landscape and, when applicable, the established architectural style of the dam. Refer to Photo 11-1 below for examples of materials and styles currently being used at the dam.



**Photo 11-1: Landscape architectural features. Design of all elements should be compatible with each other and consistent throughout Chief Joseph Dam lands to establish visual unity.**

Site lighting should be designed to eliminate light trespass from the building site, improve night sky access, and reduce development impact on nocturnal environments. Use sustainable design criteria when selecting materials and resources as noted above in Section 11.6, Building and Structures.

## 11.8 LANDSCAPE RESTORATION

As required, use noxious weed control methods when restoring areas. For example, use grasses that will out-compete noxious weeds and consider providing temporary irrigation to enhance grass seed establishment. Use an integrated pest management approach—the use of biological, cultural and chemical methods designed to reduce chemicals—to control noxious weeds.

Predominantly native, indigenous or drought tolerant plant material should be used to enhance and maintain the character of the natural landscape. A good example of this is shown in Photo 11-2 below. Use of native rock and or grass seeding should be considered to increase the natural regeneration process and appearance. Disturbance of the natural environment shall be minimized.



**Photo 11-2: Landscape restoration features. Plantings should be informal in character and emphasize natural landforms with groupings of native trees and an understory of shrubs and ground covers to reduce irrigation and maintenance requirements.**

## 11.9 VISITOR SAFETY CONTROLS

Criteria used for the selection of public use sites stress a concern for the safety of visitors. Fences and warning signs will be used to identify and protect the user from safety hazards. Flags, buoys, or floats will identify boat beaching and tie-up areas. Telephone service will continue to be available at Bridgeport State Park and near the upstream boat ramp at the left bank recreation area.



## 11.10 SIGNS

Signs shall be in accordance with criteria stated in *the U.S. Army Corps of Engineers Graphic Standards Manual* (EP 310-1-6), *U.S. Army Corps Engineers Sign Standards Manual* (EP 310-1-6a and 6b), and applicable regulations with consideration to the elements listed below. Direction and control of visitors to and within public use areas depends partly on a coherent and ordered sign system.

11.10.1 Location of signs shall be set in a fully coordinated sign plan to aid in effective placement and to eliminate unnecessary duplication. Sign inventories reflect current conditions and recommendations of this master plan. A sign plan (Supplement 1 to I) M 46, *Project Signs*, was implemented with all new signs in-place as of June 1988. This included signs for the recently constructed visitor facilities.

11.10.2 Signs shall be properly maintained, including rehabilitation, removal or prompt replacement, as needed or when required.

11.10.3 Signs should be used to delineate limits of government land at upstream primitive recreation sites, minimizing conflict with adjacent landowners.

11.10.4 When appropriate, signs may be used to identify natural or manmade hazards in public use areas and to highlight historical, natural, or recreational features.

## 11.11 WATER SYSTEMS

11.11.1 Potable Water Supply. Potable water will not be supplied at the upstream sites (Brandt's Landing and Rocky Flats). Users of these sites will be informed via brochure that only minimal facilities are available and that potable water should therefore be carried to the site. Bridgeport State Park provides a potable water supply from wells.

Drinking fountains at higher developed recreation areas must be located adjacent to an accessible route and be designed to facilitate independent use. Design requirements include ample clear ground space, drain grates that will not pose hazards to wheels or cane tips, and appropriate heights for controls and spouts.

11.11.2 Irrigation Water System. The upstream recreation sites will be left in a near-natural state with minimal site disturbance and no irrigation systems. The intent is to minimize disturbance to the native vegetation. Landscaping will consist of that which will be necessary for site restoration, shade, erosion

control, or screening. Drought-tolerant plants (native when possible) will be used, eliminating or minimizing the requirements for irrigation. The visitor orientation area and spillway viewpoint include landscaped areas with irrigation supplied for lawn, trees, and shrubs due to the high visibility and anticipated visitor use of the areas. A water-efficient automatic irrigation system (combination of drip, bubbler and spray) should be used whenever possible to reduce water consumption. The principal objective of the irrigation system is to provide supplemental water to selected plants without creating unusually lush growth patterns that would not be consistent with the restoration and landscaping objective in the Chief Joseph Dam area. Portions of the left bank wildlife management area use an irrigation system to assist in noxious weed control efforts.

11.11.3 Fire Protection Water Supply. Basic fire protection for Corps sites will be provided near the dam by Bridgeport's fire department with Douglas County as a backup. Fire breaks and fire rings should be provided at upstream, public-use areas to lessen the risk of damage to adjacent private lands. Boaters should be advised to carry buckets and shovels when using these sites.

## **11.12 ELECTRICAL DISTRIBUTION**

Existing power lines are located underground with the exception of the high-tension lines. Future electrical utilities, excepting high-tension lines, should also be located underground to maintain a clean, uncluttered appearance. The proposed development at Brandt's Landing and Rocky Flats will not have electrical power.

Solar and wind power should be considered where economically feasible and when siting permits. Solar power is currently being used for low pressure pumps associated with the wildlife mitigation effort, and to light two large entry signs into the Chief Joseph Dam project, saving considerable ditching effort and long-term costs. Wind power has not yet had an applicable use on Chief Joseph Dam land.

## **11.13 WASTE**

11.13.1 Sewage. Use sustainable design criteria for sewage systems when feasible. For example, implement decentralized on-site wastewater treatment and reuse systems where feasible; decrease the use of potable water for sewage conveyance by utilizing graywater and or blackwater systems; and consider reusing non-potable water for other uses, such as toilet flushing, landscape irrigation, etc.

Primitive recreation areas should be periodically monitored to determine use levels and the adequacy of the sanitary facility offered.

11.13.2 Solid Waste Disposal. Rocky Flats will not be provided with trash receptacles. Users will be informed via brochure and signing that all trash accumulated during their stay must be packed out and disposed of at proper locations. Trash receptacles will be provided at Brandt's Landing, the Bridgeport State Park boat ramp, and the upstream boat ramp for disposal of trash upon returning from the upstream recreation sites.

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## **SECTION 12**

# **CONCLUSIONS AND RECOMMENDATIONS**

## SECTION 12 - CONCLUSIONS AND RECOMMENDATIONS

### 12.1 GENERAL

This master plan presents recommendations for the preservation, conservation, restoration, maintenance, management, and development of Corps lands, waters, and associated resources, consistent with the authorized purposes for Chief Joseph Dam and Rufus Woods Lake. Lands were acquired in accordance with the authorizing documents for hydropower and recreation on the Columbia River.

Resource development and management actions should be measured against the Chief Joseph Dam resource use goals and specific management area resource objectives identified in Sections 1, and 5 through 10. This plan serves as the foundation to the follow-up OMP as prescribed by Chapter 2 of Engineer Regulation 1130-2-540 and Chapter 3 of Engineer Regulation 1130-2-550.

### 12.2 RECOMMENDATIONS

It is recommended that *Design Memorandum 60: Chief Joseph Dam–Rufus Woods Lake Master Plan* be adopted as a guide to the orderly use, development and management of the natural and manmade resources of the Chief Joseph Dam and Rufus Woods Lake, as administered by the U.S. Army Corps of Engineers, Seattle District. Land classifications described in Section 4 and resource objectives described in Sections 5 through 10 provide a balanced plan for sound resource use, development, and management consistent with the authorized purposes, and are based on the determination of the highest and best use.

Periodic re-evaluation of the identified resource objectives, accompanied by possible modification of some objectives and or established priorities, will be necessary. Accordingly, updating of this master plan shall be scheduled as recommended in ER and EP 1130-2-550. The present ER requires a periodic review, such as every five years, and revised as required. Recommendations specific to this master plan are identified below.

12.2.1 Future Design. Future design memorandums or reports shall be prepared if extensive development of any site is required in the future. Traditionally, it has been the policy of the Corps of Engineers to encourage non-federal participation in the development and administration of recreation areas or features at Corps facilities. Lease for operation of Bridgeport State Park by Washington State Parks and Recreation Commission is an example of the application of this policy. Current policy governing new recreation development at Corps facilities, as described in ER 1165-2-400, *Recreation Planning, Development, and Management Policies*, stipulates ~~that~~ “development to meet increased demands for recreation facilities should be pursued with local funds, through lease agreements with local government units, or other means.”

12.2.2 Operational Management Plan. As required in chapter 3 of ER 1130-2-550, an OMP has been completed and updated annually since 1995 in conjunction with the most recently approved master plan. The purpose of the OMP is to translate the concepts identified in the master plan into detailed management and administrative functions for the orderly and efficient management of the natural, manmade, and cultural resources. It identifies the requirements for personnel, equipment, and funding needed to achieve the objectives stated in this master plan. Specific guidance is provided in Chapter 3 of EP 1130-2-550.

12.2.3 Historic Properties Management Plan. Section 3.6 cites the last environmental compliance assessment conducted in spring 2000. Section 3.6.4 states it has been many years since Chief Joseph Dam had a comprehensive inventory conducted of historic properties. Field work for a total major resurvey was completed in 2000; results are currently being compiled. Section 3.6.4 also stated the existing HPMP has expired. This plan is required by EP 1130-2-540 and is currently under preparation with completion scheduled for 2002. Section 2.16 describes cultural resources in detail. Several tasks are still required by a 1979 Memorandum of Agreement with the Advisory Council on Historic Preservation and the Washington State Historic Preservation Officer for raising the pool 10 feet as described in Section 2.16.1, Cultural Resources Continuing Responsibilities.

Studies will be initiated in the next few years to inventory and evaluate the dam and associated structures for historical significance as they reach the 50-year guideline for determining National Register of Historic Places eligibility.

For easement lands on which the Corps has cultural resource rights, the Corps needs to clarify its ability to manage lands to prevent adverse effects by the actions of others. After the Corps' Office of Counsel reviews this situation, the Corps will develop procedures for exercising "due diligence."

12.2.4 Natural Resource Inventories. As described in footnotes 4 and 5 of Section 2.14, Fish and Fisheries, assessments for game and non-game fish inventories were last conducted in the 1970's. An EIS report was published in the mid-1990's. With the presence of private commercial fish rearing operations on Rufus Woods Lake and the increased possibility of accidental and intentional fish releases, it is imperative the inventories remain current and accurate.

Conduct threatened and endangered species inventory, as listed in Section 10.2.4, Flowage Easements Development and Management Actions, for, small mammals, reptiles, and amphibians on fee and flowage easement lands. Section 2.15, Threatened and Endangered Species, relies on inventory information from other government agencies but does not include lands other than fee and flowage easement lands.



12.2.5 Visitation Survey. Appendix C states the last visitor survey was conducted in 1990 but the results were not entirely accurate due to incompatibilities between the paper survey and the computerized analysis program. Recommendation is to conduct a new visitor survey using the approved DDES/VERS computer traffic stop survey.

12.2.6 Marketing and Partnering. Section 3.3.2, Visitation External Factors, points out that tourism is a basic industry and an important factor to the economy. Visitor information should consider other facilities, counties, and destinations as compliments, not competition. New visitors rely on good maps and proper signing to reach their destinations. The Corps must collaborate with the public and use existing resources more efficiently. Water-dependent activities rely on good water quality as pollution can result in economic damage. Other factors to consider are mentioned in Appendix C.

12.2.7 Visitor Center Access. Construct a new elevator for public access to the visitor center, unless a new visitor center is constructed, that eliminates the conflict between work crews and visitors (reference Sections 5.2.1.g).

12.2.8 Columbia River Bridge. As discussed in Section 5.7.1, major repairs are need on the bridge to assure its continued safety to motorists and pedestrians. This includes a new guardrail with costs being borne by the WSDOT, stabilization of the right bank bridge abutment by the Corps of Engineers, and widening of the bridge to accommodate pedestrians and bicyclists. The average daily traffic volume past Chief Joseph Dam and the city of Bridgeport is 1,200 to 2,000 vehicles per day on SR 17 at milepost markers 135.84 and 135.86 respectively.<sup>1</sup> Trucks represent up to 23 percent of the volume. High priority should be given to bridgework on the basis that SR 17 is considered a "minor arterial" by the WSDOT.<sup>2</sup> Safety is of utmost importance to the public and should not be taken lightly.

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<sup>1</sup> Washington State Department of Transportation, *1999 Annual Traffic Report* (Internet report, [www.wsdot.wa.gov/ppsc/TDO/atr1999.pdf](http://www.wsdot.wa.gov/ppsc/TDO/atr1999.pdf)), pp. 30, 83. Traffic volume is for both directions.

<sup>2</sup> Washington State Department of Transportation, *Proceedings from 6<sup>th</sup> National Conference on Transportation Planning for Small & Medium Sized Communities* (Spokane, Washington, September 16-18, 1998, Internet report, [www.wsdot.wa.gov/fasc/engineeringpublications/Manuals/TRB.pdf](http://www.wsdot.wa.gov/fasc/engineeringpublications/Manuals/TRB.pdf), glossary of terms), pp. 291-303. "Rural minor arterials" is defined as being expected to provide for relatively high overall travel speeds with minimal interference to through movement.

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# **APPENDIX A**

## **PERTINENT DATA**

## CHIEF JOSEPH DAM PERTINENT DATA

CJ-Pertinent.doc B. Ecker Rev. 9/1/01

### PURPOSES<sup>1</sup>

Operating Purpose  
Hydroelectric Power

Authorized Purposes:  
Hydroelectric Power<sup>2</sup>  
Recreation<sup>3</sup>

Authorizing Laws:  
PL 79-525  
PL 78-534

### GENERAL

Project Name	Chief Joseph Dam <sup>4</sup>
Project Work Identifier	003200
Owner/Operator	Seattle District U.S. Army Corps of Engineers
Dates of Dam Construction	1949-1958, 1973-1979 <sup>5</sup>
Stream	Columbia River, Washington, at Foster Creek
County and State	Okanogan Co., Washington (north shore; right bank), Douglas Co., Washington (south shore; left bank)
USGS Quadrangle	Chief Joseph Dam and Coleman Hill Quadrangles; 7.5 minute series
Location	Sec 24, T29N, R25E and Sec 19, T29N, R26E, WM. 1.5 Rd mi E of Bridgeport, 130 mi W of Spokane, 227 mi E of Seattle

<sup>1</sup> Extracted from *Authorized and Operating Purposes of Corps of Engineers Reservoirs*, July 1992; CEWRC-HEC Hydrologic Engineering Center, Davis California. Subsequent legislation augmented the missions of the Corps, thus Chief Joseph Dam currently operates in the interest of hydropower, navigation and flood control, irrigation as a resulting benefit, recreation, environmental stewardship, and emergency preparedness.

<sup>2</sup> Authorization for construction of Foster Creek Dam (Chief Joseph Dam) and a powerhouse on the Columbia River in Washington State was provided under PL 79-525, Title I-River and Harbor Act of 1946 (Sec. 1, July 24, 1946) on the basis of a survey report submitted by the Chief of Engineers on April 9, 1946 (H. Doc 693; 79th Cong, 2nd sess; July 3, 1946). Recommended was a dam and powerhouse with 15 generating units and provisions for a 16th unit when necessary. Authorization for additional units was provided for in H. Doc 693 (Chp. III-Project Plan, p. 25, #63). It is unclear whether irrigation was authorized as a secondary purpose—the Bureau of the Budget requested it be pointed out in H. Doc 693 that the project could be developed so as to provide irrigation benefits. Currently, it is a resulting benefit. Chief Joseph Dam is not regulated for this purpose. Flood control and navigation were never an objective of the project, but may be an indirect benefit.

<sup>3</sup> Recreation access and facilities on Corps lands nationwide were authorized under PL 78-534 (Flood Control—Construction Act of 1944, Dec 22, 1944), and are provided at Chief Joseph Dam. However, Rufus Woods Lake is not controlled for this purpose. Subsequent legislation, primarily PL 89-72, Federal Water Project Recreation Act (July 9, 1965), furthers the recreation objective and fish and wildlife enhancement at all federal projects. Provision to construct Bridgeport State Park on Corps land was provided under H. Doc 693 (Chp. III-Project Plan, p. 39, #111).

<sup>4</sup> Foster Creek Dam and powerhouse was authorized at an estimated construction cost of \$104M for 15 units and an annual O&M cost of \$1.2M. Actual construction costs totaled \$144,338,252 for units 1-16; annual O&M costs approximate \$12M. Name change to Chief Joseph Dam, in honor of the Nez Perce Chief, was approved in PL 80-858 (River and Harbor Act, June 30, 1948). Reservoir designation to Rufus Woods Lake was approved July 9, 1952 (PL 82-469). Authorization for construction and O&M of recreation facilities was provided in PL 78-534 (*Flood Control—Construction*, December 22, 1944, Sec. 4; see footnote 3).

<sup>5</sup> Generating units 1-16 contract awarded December 12, 1949. Unit 1 on-line August 21, 1955; unit 16 on-line September 27, 1958. Additional units 17-27 contract awarded November 1973. Unit 17 on-line for commercial operations June 17, 1977; unit 27 on-line May 1979. Units 28 and 29 have not been approved.

## RESERVOIR

All data was verified and updated by Seattle District and Chief Joseph Dam personnel for this master plan

Name	Rufus Woods Lake
Lake Raise and Date (auth. full pool elev. at the dam)	956 ft NGVD, <sup>6</sup> Feb 1981
Shoreline Miles at Elev. 946 ft	106 mi
Length of Reservoir <sup>7</sup>	51 mi
Maximum Depth	200 ft
Drainage Area Above Dam	75,400 sq mi
Reservoir Pool Elevations:	
Minimum Pool	930 ft NGVD
Normal (full pool)	956 ft NGVD
Maximum Regulated Pool	956 ft NGVD
Maximum Design Pool	958.8 ft NGVD
Maximum Surface Area at Elev. 956 ft	8,400 ac
Gross Storage Capacity at Elev. 956 ft (not for flood control)	593,000 ac-ft <sup>8</sup>
Flood Peak at Chief Joseph Dam: Maximum Recorded (1894)	740,000 cfs
Flood Peak at Grand Coulee Dam: Minimum Recorded (1941)	170,000 cfs
Maximum Recorded (1948)	638,000 cfs

## DAM

Location	RM 545.5 from mouth of Columbia River at the Pacific Ocean; 204 river mi from Canadian border; 51 river mi downstream from Grand Coulee Dam
Dam Type	Concrete Gravity
Elevation (top of dam)	970 ft NGVD
Height above streambed (bedrock to top of dam at elev. 970 ft)	236 ft
Width at Crest (thickness at elev. 970 ft)	34 ft
Length of Entire Dam along Axis	≈ 5,962 linear ft <sup>9</sup>
Volume of Concrete (entire project)	2,111,307 cu yds <sup>10</sup>

## SPILLWAY

Location	Right bank, connected to curved non-overflow concrete section founded on a mid-channel rock outcropping
Spillway Type	Gated, concrete gravity
Crest Elevation	901.5 ft NGVD
Gate Top Elevation	958 ft NGVD
Bridge Elevation	970 ft NGVD
Control Gates and Type	19, Tainter
Gate Size	36 ft w x 58.2 ft h
Gate Radius	55 ft
Chute Length	918 ft
Stilling Basin	211 ft l x 915.3 ft w
Design Flood (regulated)	1,200,000 cfs
Hydraulic Design Capacity at Elev. 957 ft	1,250,000 cfs

<sup>6</sup> National Geodetic Vertical Datum (formerly Sea Level Datum of 1929) is a fixed vertical control measure used as a reference for establishing varying elevations. It does not account for the changing standard of sea level. Mean sea level is the average height of the sea surface for all tide stages over a 19-year period and is no longer used by the Seattle District Corps of Engineers.

<sup>7</sup> Chief Joseph Dam (RM 545.5) to Grand Coulee Dam (RM 596.5). Corps of Engineers' management responsibility is 42 miles (Chief Joseph Dam RM 545 to Seaton's Grove Boat Ramp RM 590).

<sup>8</sup> An acre-foot of water covers one acre to a depth of 1 foot and is equivalent to 325,872 gallons.

<sup>9</sup> Includes the roadway entrances to both right and left abutments of the dam and intake structure.

<sup>10</sup> Main dam 945,328 cy, powerhouse and intake structure pre-pool raise 860,379 cy, pool raise and additional units 305,600 cy.

## POWERHOUSE

Location	Left abutment, follows downstream alignment.
Powerplant Structure	2,039 ft l x 68 ft w x 136 ft h
Turbines and Type	27, Francis (vertical shaft)
Turbines and Manufacture:	
Units 1-4, 15-16	6, S. Morgan Smith Company
Units 5-14	10, Newport News Shipbuilding & Dry Dock Company
Units 17-27	11, Hitachi America, Ltd.
Turbine Rated Horsepower (per unit):	
Units 1-16 at 165-ft Rated Head	100,000 hp (117,700 hp at max. cap.)
Units 17-27 at 163-ft Rated Head	136,000 hp
Turbine Hydraulic Capacity (per unit): <sup>11</sup>	
Units 1-4, 15-16 at 165-ft Rated Head	7,300 cfs at 117,700 hp
Units 5-14 at 165-ft Rated Head	7,064 cfs at 115,100 hp
Units 17-27 at 163-ft Rated Head	9,586 cfs at 150,995 hp
Generators and Manufacture:	
Units 1-16	16, Westinghouse Electric
Units 17-27	11, General Electric
Generator Rated Nameplate Capacity, per unit:	
Units 1-16 (13.8 kV, 60-cycle 3-phase)	92,920 kVA at 0.95 pf ( $\approx$ 88,274 kW) <sup>12, 12a</sup>
Units 17-27 (13.8 kV, 60-cycle 3-phase)	100,000 kVA at 0.95 pf (95,000 kW) <sup>13</sup>
Total Powerplant Capacity, current	2,457,384 kW
Maximum Continuous Rating (overload capacity), per unit:	
Units 1-16, current	92,920 kVA at 1.0 pf (92,920 kW) <sup>12, 12a</sup>
Units 17-27, current	115,000 kVA at 1.0 pf (115,000 kW) <sup>13</sup>
Total Powerplant Capacity, current	2,751,720 kW <sup>12a</sup>
Station Service Units:	
Turbines and Type	2, Francis (vertical shaft)
Penstock Size	6 ft dia.
Turbine Rating and Manufacture	3,500 hp at 165-ft net head; Pelton Waterwheel Company
Generators and Manufacture	2, Elliott Company
Generator Rating (4,160v, 60-cycle 3-phase) <sup>14</sup>	3,000 kVA at 0.8 pf (2,400 kW)

## INTAKE SECTION

Location	Left bank (south shore)
Intake Structure Type	Concrete Gravity
Intake Structure Length	2,036 ft
Penstocks and Type	27, steel plate
Penstock Size	258 ft l x 25 ft dia. x 5/8 in to 1¼ in. thick

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<sup>11</sup> Total turbine hydraulic capacity (excl. station service units) is approx. 212,900 cfs when operated at maximum continuous generator capacity.

<sup>12</sup> Units 1-16 initial rated capacity was 67,368 kVA at 0.95 pf (63,997 kW; total 1,023,952 kW). These generators were rewound 1986-1988 to 92,920 kVA at 0.95 pf (88,274  $\pm$  kW; total 1,412,384 kW), but they cannot obtain this rated nameplate output capacity as turbine upgrades were not performed. Initial maximum continuous rating was 67,368 kVA at 1.0 pf (67,368 kW; 1,077,888 kW). After rewinding, maximum continuous rating is 92,920 kVA at 1.0 pf (92,920 kW; total 1,486,720 kW). <sup>12a</sup>Actual output is limited due to hydraulic limitations.

<sup>13</sup> Units 17-27 rated capacity is 100,000 kVA at 0.95 pf (95,000 kW; total 1,045,000 kW). Continuous overload rating is 115% of nameplate, 115,000 kVA at 0.95 pf (109,250 kW; total 1,201,750 kW). Maximum output at continuous overload rating is 115,000 at 1.0 pf (115,000 kW; total 1,265,000 kW).

<sup>14</sup> Station service units located between units 12 and 13. Emergency power provided by 125/250v battery banks.

<b>CORPS OF ENGINEERS STAFF</b>	96 employees	
<b>BUILDINGS</b>		
Boathouse (floating)	≈ 1,600 sq ft	
Commons (Conference) Building	4,800 sq ft	
Group Picnic Shelter (30' x 50')	1,500 sq ft	
Powerhouse	240,000 sq-ft <sup>15</sup>	
Project Office	5,447 sq ft	
Resource Section Annex (ranger building)	4,400 sq ft	scheduled for removal
Sandblasting Structure	2,000 sq ft	
Security Access Control Facility	300 sq ft	
Storage Building	3,472 sq ft	
Tin Shed (behind warehouse garage)	2,496 sq ft	
Warehouse No. 1 and Addition ("L" Building)	32,288 sq ft <sup>16</sup>	
Warehouse No. 2 "Western Warehouse"	10,000 sq ft	
Wildlife Mitigation O&M Facility	960 sq ft	
Downstream Gaging Station	240 sq ft	
Upstream Gaging Station	63 sq ft	
Lower Foster Creek Vault Toilet	60 sq ft	
Debris Collection Area Vault Toilet	60 sq ft	
Upstream Boat Ramp Vault Toilet	60 sq ft	
Right Bank Fishing Area Vault Toilet	60 sq ft	
South Viewpoint Vault Toilet	60 sq ft	
Upper Spillway Viewpoint Restroom	256 sq ft	
Visitor Orientation Area Restroom	520 sq ft	
Brandt's Landing Vault Toilet	60 sq ft	
Rocky Flats Vault Toilet (summer 2001+)	25 sq ft	
North Viewpoint Sun Shelter	320 sq ft	
Right Bank Fishing Area Sun Shelters (3)	96 sq ft ea.	
South Viewpoint Sun Shelter	320 sq ft	
Upstream Boat Ramp Sun Shelter	320 sq ft	
Lower Foster Creek Sun Shelter	320 sq ft	
Project Entry Signs (2, concrete)	NA	

<b>RECREATION</b>	<b>Day</b>	<b>Overnight</b>
<b>Chief Joseph Dam and Rufus Woods Lake</b>	<b>Use</b>	<b>Use</b>
Brandt's Landing, left bank	Yes	No
Bridgeport State Park:	Yes	Yes
Leased 283.15 ac; State-owned 434.10 ac; Total Acres 717.25 ac		
Downstream Boat Ramp, left bank	Yes	At adjoining Marina Park
North Viewpoint, right bank	Yes	No
Right Bank Fishing Area	Yes	No
Rocky Flats, left bank	Yes	Yes <sup>17</sup>
South Viewpoint, left bank	Yes	No
Spillway Viewpoint, right bank	Yes	No
Upstream Boat Ramp, left bank	Yes	No
Visitor Center in Powerhouse, Type B	Yes	No
Visitor Orientation Area, right bank	Yes	No

<sup>15</sup> Includes the 1,467 square-foot visitor center.

<sup>16</sup> Original warehouse is approximately 17,111 square feet. The warehouse addition was completed in 1983 and is approximately 15,177 square feet. This combined structure includes the automotive shop, carpenter shop, paint shop and storage, tanker storage, and utility shop.

<sup>17</sup> Boat-in access only, low density use, primitive camping.



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**APPENDIX B**  
**REAL ESTATE INTERESTS:**

**ACREAGE**

**PUBLIC DOMAIN LANDS**

**AGREEMENTS**

## CHIEF JOSEPH DAM -- LAND CLASSIFICATIONS, MANAGEMENT UNITS AND ACREAGE

REAL ESTATE LAND (Above/Below Full Pool) <sup>1</sup>	ACREAGE	NOTE	cjdlacreages.doc 9/1/01 Bonnie Ecker
Fee title	1,687.83 *	Includes 0.36 ac acquired in cure of dispute resolution	
Public Domain	2,424.52	Gov't-owned land administered by BLM that has been withdrawn from the public for corps use in connection with the operation of CJD.	
Leased	2.44	2.43 ac to cross private property for RR/Hwy access to deliver turbines/equip to dam (DACW67-5-97-5); 0.01 ac for Total Dissolved Gas monitoring station (DACW67-5-97-10).	
Held by Permit	2.41	Transfer from Dept. of Interior's BOR to Corps of Engineers in 1958.	
Held by License	0		
Riverbed	0	CCT owns the land below the water from the centerline to the Okanogan County side. The WA State DNR owns the land below the water from the centerline to the Douglas county side.	
Held by Easement	<u>12,006.70</u>	Utility easement 0.67 ac; 5.01 ac powerline easements; 0.39 ac boundary easements; 0.95 ac bank protection sites from BIA; 2.70 ac access roads from BIA to protection sites; 38.58 ac access along SR 17 at Okanogan Bridge; 1,669.02 ac mitigation land; RR siding at Brewster; 39.44 ac Columbia River Br hwy access on left bank (above full pool); 6.4 ac Col River Br structure (above full pool); 2.12 ac downstream cableway crossing.	
<b>TOTAL REAL ESTATE INTEREST</b>	<b><u>16,123.90</u></b>	Surplused land mentioned in 1988 master plan has been surplused and removed from this total. Total realty interests (16,123.90 acres of fee, easement, public domain, and other lesser interests) acquired by the Corps also includes those lands below elevation 955 feet, for example, those lands that historically extended to the high ordinary water level of the Columbia River in 1945	

<sup>1</sup>264.85 ac SR 17-related land, 87.8 ac BPA station on left bank, 14.53 ac Left Bank Wildlife Mgt Area.

### \* LAND ALLOCATION (breakdown of fee title land)

Operations	1,687.83	1,227.20 acres <i>above</i> full pool on August 12, 1993, are considered under Land Classification. **
Recreation	0	
Fish and Wildlife	0	
Mitigation	<u>0</u>	
<b>TOTAL ALLOCATED FEE LAND</b>	<b><u>1,687.83</u></b>	

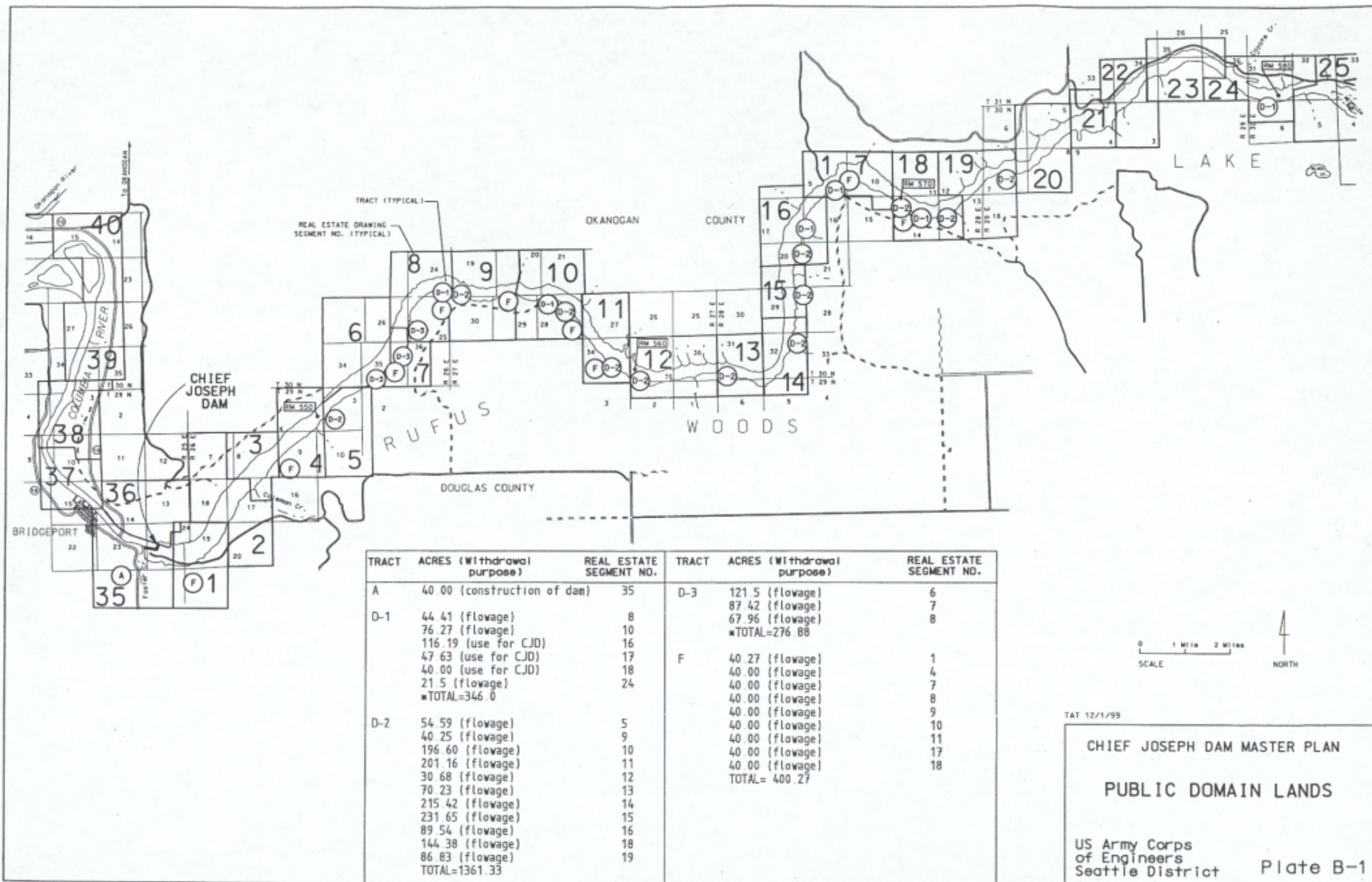
### \*\* LAND CLASSIFICATION (breakdown of allocated land)

	MANAGEMENT UNIT	Sub Areas
Total fee title <i>above</i> full pool	<u>1,227.20</u>	
Operations: Project Operations	266.17	<p>Dan and Appurtenant Structures: 0 ac: Nonoverflow section (dam), spillway, buttonhook, power intake section, powerhouse, visitor center, log boom, project boathouse.</p> <p>Left Bank Operations Area: 81.2 ac: Warehouses (2), utility bldg, automotive shop, storage bldg, outside storage, warehouse addition, carpenter/paint shops, sand blasting bldg, sand hopper, resources section annex, Commons Bldg, playground, group picnic shelter, river level gaging station upstream, prj office, lower Foster Creek.</p> <p>Left Bank Storage Area: 20.7 ac.</p> <p>Wildlife Mitigation O&amp;M facility: 1.2 ac on left bank.</p> <p>Columbia River Bridge: 8.7 ac: Lf Bank 5.3 ac fee + 3.4 ac fee Rt bank. (39.44 ac easement for hwy access to bridge on Lf bank + 6.4 ac easement for the structure.) WSDOT maintains bridge through license (outgrant) agreement with the Corps.</p> <p>Bridgeport Slide Area: 50.1 ac on left bank. (Approx 800 ac in fee &amp; flowage easement lands.)</p> <p>Right Bank Staging Area: 4.6 ac.</p> <p>Big Hole Quarry: 99.1 ac on right bank, downstream.</p>

(continued next page)

Operations: Project Operations, con't		Downstream Gaging Station:	0.57 ac on left bank of Bridgeport shoreline. (2.12 ac easement from state of WA for cableway crossing operated by the USGS. Corps stream gaging tower no longer used by the USGS.)
Operations: Recreation	318.18	South Viewpoint:	1.7 ac on left bank.
		Bridgeport State Park:	283.15 ac on right bank are leased to WA St Pks & Rec Comm for operation of Bridgeport St Pk. Of the 283.15, 80 ac are subleased to Lake Woods Golf Club. The state owns an additional 434.1 ac for park & rec use.
		Spillway Viewpoint:	2.2 ac on left bank.
		Right Bank Fishing Area:	12.3 ac on right bank.
		North Viewpoint:	1.9 ac on right bank.
		Visitor Orientation Area:	16.1 ac on right bank.
		Downstream Boat Ramp:	0.83 ac on left bank.
Operations: Multiple Resource Management	569.10		
Recreation-Low Density	88.10	Left Bank Recreation Area:	57.1 ac: Debris Collection Area and Upstream Boat Ramp.
		Brandt's Landing:	22.4 ac at RM 551, left bank.
		Rocky Flats:	8.6 ac at RM 558, left bank. (BLM public domain land for use by the Corps and public. Up to 8.6 ac may be developed.)
Vegetation & Wildlife Management	481.00	Left Bank Wildlife Management Area:	133.3 ac: Parcel 1 is 22.4 ac + 110.9 ac Parcel 2.
		Right Bank Wildlife Management Area:	330.2 ac.
		RM 548:	7.5 ac on left bank.
		RM 564: Alec Canyon:	10.0 ac on left bank.
Operations: Environmentally Sensitive Areas	37.60	Nespelem:	37.6 ac at RM 583, right bank. (45.2 ac above and below full pool.)
Operations: Mitigation	36.15	16 Wildlife Mitigation Sites:	36.15 ac: Sites 2 and 7. (121.85 fee ac above and below full pool - sites 2 and 7; 962.42 ac public domain land - sites 1, 6, 7, 10, 11 [+1,462.10 ac not actively managed by the Corps]; 1,669.02 ac flowage easement lands - sites 3, 5, 8, 9, 11, 12, 15, 16, 18, 19, 20.)
<b>SUBTOTAL - FEE LAND ABOVE FULL POOL</b>	<b>1,227.20</b>		
Easement Land (Corps holds easement interest but not fee title)	12,006.70		
Public Domain Land	2,424.52		
<b>TOTAL FEE &amp; EASEMENT LAND</b>	<b>15,658.45</b>		
Leased Land	2.44		
Permit Land	2.41		
Riverbed	0		
Remaining Land <i>Below</i> Full Pool	460.60		
<b>TOTAL CHIEF JOSEPH DAM REAL ESTATE LANDS</b>	<b><u>16,123.90</u></b>		
		1,687.83 acres total Operations fee title acreage less 1,227.20 acres <i>above</i> full pool on August 12, 1993.	
		Total realty interests (16,123.90 acres of fee, easement, public domain, and other lesser interests) acquired by the Corps also includes those lands below elevation 955 feet. For example, those lands that historically extended to the high ordinary water level of the Columbia River in 1945.	

**Table B-1: Land classification breakdown and management units.**



TRACT	ACRES (Withdrawal purpose)	REAL ESTATE SEGMENT NO.	TRACT	ACRES (Withdrawal purpose)	REAL ESTATE SEGMENT NO.
A	40.00 (construction of dam)	35	D-3	121.5 (flowage)	6
D-1	44.41 (flowage)	8		87.42 (flowage)	7
	76.27 (flowage)	10		67.96 (flowage)	8
	116.19 (use for CJD)	16		■TOTAL=276.88	
	47.63 (use for CJD)	17	F	40.27 (flowage)	1
	40.00 (use for CJD)	18		40.00 (flowage)	4
	21.5 (flowage)	24		40.00 (flowage)	7
	■TOTAL=346.0			40.00 (flowage)	8
D-2	54.59 (flowage)	5		40.00 (flowage)	9
	40.25 (flowage)	9		40.00 (flowage)	10
	196.60 (flowage)	10		40.00 (flowage)	11
	201.16 (flowage)	11		40.00 (flowage)	17
	30.68 (flowage)	12		40.00 (flowage)	18
	70.23 (flowage)	13		TOTAL= 400.27	
	215.42 (flowage)	14			
	231.65 (flowage)	15			
	89.54 (flowage)	16			
	144.38 (flowage)	18			
	86.83 (flowage)	19			
	TOTAL=1361.33				

TAT 12/1/99

CHIEF JOSEPH DAM MASTER PLAN

PUBLIC DOMAIN LANDS

US Army Corps  
of Engineers  
Seattle District

Plate B-1

[Originating Memorandum of Agreement (OR-70), 1972/1973  
Refer to Plate B-1 for Public Domain Lands]

**MEMORANDUM OF AGREEMENT BETWEEN THE SECRETARIES OF THE  
ARMY AND THE INTERIOR RELATIVE TO MANAGEMENT OF LAND AND  
WATER RESOURCES AT EXISTING OR PROPOSED PROJECTS OF THE CORPS  
OF ENGINEERS LOCATED WITHIN OR PARTLY WITHIN AREAS OF LANDS  
UNDER THE JURISDICTION OF THE BUREAU OF LAND MANAGEMENT.**

Section 1 -- Purpose. This agreement sets forth the principles and procedures for procedures for coordination of Corps of Engineers and Bureau of Land Management (BLM) programs where the Corps of Engineers, Department of the Army (Corps) constructs and operates water resource projects in and adjacent to lands administered by the Bureau of Land Management (BLM lands).

Section 2 -- Authority. The Secretary of the Army is authorized and directed to provide for public access and the recreational use of reservoirs and other water controlled projects constructed by the Corps and to do this directly or through Federal, State, or local agencies. The Secretary of the Interior is authorized and directed to manage BLM lands under principles of multiple use and sustained yield. The Secretary of the Army and the Secretary of the Interior are authorized to transfer an appropriate interest in lands either by permit or withdrawal order under their respective jurisdictions to facilitate their programs.

Section 3 -- Planning. When the Corps undertakes planning studies and investigations of any type, the consequences of which result in an impact on lands administered by BLM, BLM will be invited to cooperate during all stages of the planning process. The Corps and BLM will coordinate plans to the fullest extent possible for the preservation, protection, use, management and development of land resources involved for access facilities, roads and trails, for public recreation, wildlife and fish propagation, and the conservation of scenic and esthetic values.

To accomplish these objectives the Corps and BLM will coordinate their planning, beginning with the survey report and continuing through the successive planning stages. BLM will provide pertinent information, recommendations and impact reports to the Corps. These impact reports will evaluate the effects of proposed projects on BLM lands and programs and of BLM programs on the proposed project, and provide basic data for management responsibility decisions. The survey report will adequately deal with the identified impacts. If jurisdiction is not established in the survey report, it will be reached as soon as possible during the project planning stage.

Section 4 -- Supplemental Land Management Agreements. Supplemental agreements may be drafted by field officials of the Corps and BLM for existing and proposed projects. Recreation management agreements will not be considered for change where already established and in operation. Agreements will cover specific procedures and responsibilities for administration of the project area and adjacent or otherwise related BLM lands. Agreement will be signed by the BLM State Director and the Corps District Engineer and will be forwarded to the Chief of Engineers for final approval by the Chief and the Director, BLM.

Supplemental agreements for existing projects may be initiated by either the Corps or BLM as needed. Supplemental agreements for proposed projects will be either completed and made part of the appropriate design memorandum or completed prior to the beginning of project construction. Supplemental agreements will be based upon and become a part of master plans for each project which will set forth planned development for the project area.

The following guidelines will govern supplemental agreements, unless waivers are obtained from the

Directors, BLM and the Chief, Corps of Engineers.

A. The Corps, in all cases, will be responsible for construction, maintenance, and operation of the water control and water management features of projects. The Corps will have full use and administration of necessary lands for these purposes.

B. BLM, in all cases, will be responsible for mineral leasing, action on mining claims, title and realty action assigned by law to BLM, and official cadastral survey of public domain lands. Coordination will be effected with the Corps where project lands are concerned.

C. Management responsibilities for resources and values, other than those indicated under A and B above, may be assigned as mutually agreeable to either BLM or the Corps, taking the following points into consideration.

1. Over-all efficiency and effectiveness of government operations will be the major guidelines, subject to A and B above. Either agency may transfer management responsibilities to the other within the project boundaries. Individual management responsibilities may also be transferred on a reimbursable basis except for management of public recreation use.

2. In areas where the adjacent public lands outside the project boundaries are not proper for classification for multiple use management and retention in Federal ownership as normally determined by BLM, or where there are insufficient public lands to form an efficient management unit, the Corps will retain full responsibility for all features of the project. BLM will be available to provide, on a reimbursable basis, specialized resource management services.

3. In areas where the adjacent public lands are proper for classification for multiple use management, or where they are so classified, and where BLM is operating a multiple use management program, BLM may be assigned related land management responsibilities on the Corps project. The following guidelines will be used to determine proper assignment of such responsibilities:

- (a) Range, Timber, Watershed, and Wildlife. If BLM is operating management programs for these resources on the adjacent public lands, and if these programs are closely interrelated with similar resources on the project, BLM may be assigned management of such resources on the project including both public domain and acquired land portions, in accordance with the Corps Forest Management Plan.

- (b) Recreation. It is the objective of the two agencies to provide recreation management that will best serve the public interest. Recreation management and development of public lands will be undertaken by the BLM on those reaches of land adjoining the Corps reservoirs in which it has the predominant Federal interest and by the Corps in those reaches of adjoining lands in which the Corps has the predominant Federal interest, unless the two agencies mutually agree otherwise in the interest of efficient and effective management. Reaches are defined as segments or areas which are major geographical features comprising a substantial portion of the shoreline and recognized as separate geographical entities, and considered as the end destination of the majority of recreation users. In the determination of the predominant Federal interest in adjoining reaches of lands, the following factors, individually and in combination, will be taken into account:

- (1) The amount of lands usable for public use withdrawn from the public domain for the project compared to the amount of land acquired by the Corps, by purchase, condemnation, donation and transfer from agencies other than BLM;

- (2) The impact of the project on BLM lands, programs, and uses, including recreation generated thereby and project related roads and highways;



- (3) The character and requirements of recreation management on project lands and the need for correlation with management of adjoining BLM lands;
- (4) The capabilities of the agencies in terms of in-place related programs and organizations to assume the recreation facilities, including the degree to which these programs and organizations can be extended to the project area;
- (5) The desirability of single agency administration to avoid duplication of Federal programs and organizations on relatively limited areas of Federal lands;
- (6) The effect of commitments or obligations imposed by Congressional action in authorizing documents for the project.

Whatever administrative arrangements are made,

- (1) Recreation plans for project lands and for BLM lands will be reviewed by the two agencies and coordinated.
- (2) BOR will serve as advisor to both agencies on recreational matters.

D. Public domain lands withdrawn for the Corps normally will remain under interim BLM management until such time as the lands are needed for project purposes or the lands are determined surplus to the Corps needs and returned to exclusive BLM administration. Interim management will include such conditions and stipulations as the Corps determines necessary for future Corps project development.

E. BLM will issue to the Corps the minimum interest in lands required solely for rights-of-ways for roads, railroads, utilities and other facilities which will permit access and relocation requirements to be met.

Section 5 -- Mitigation. BLM improvements and structures, including public land survey corner monuments, which will be destroyed or rendered useless by reason of a Corps project and which are still needed by BLM will be removed or replaced by the Corps at a location to be determined by BLM and in such kind and quantity as will provide levels of service and or access at least equivalent to those existing prior to the project construction, subject to interagency budgetary procedures.

Section 6 -- Protection of Resource Values. During project construction, the Corps will take all reasonable precautions to prevent and suppress forest and range fires and prevent any unnecessary damage to lands and resources in the area. To this end, the Corps will consult with BLM and will formulate fire prevention and control plans and programs, and will provide for resource and environmental protection in location of access roads, and relocation of transportation facilities, land clearing and other construction matters.

Section 7 -- Land Transfers. The Corps will determine, consistent with the land acquisition policy of the Secretary of the Army, the BLM land required for the construction, operation, and maintenance of water resource projects. The Department of the Army, after consultation with the Department of the Interior, will file an application for withdrawal under the regulation in 43 CFR 2311.1-1.

The Corps where possible will file request for withdrawal well in advance of its need for the land. BLM will protect the public domain requested by the Corps from further entry. If withdrawal has not been completed at the time public domain is needed by the Corps for construction, the Corps will request right of entry for construction and BLM will promptly process such request.

Consistent with the Departmental Manual 603, BLM will complete action on the land withdrawal



application after, or subject to, the supplemental agreement provided for in Section 4 above. Such supplemental agreements will also be prerequisite to transfers of land by the Corps to BLM pursuant to applicable law.

The Corps will retain in any transfer of land the rights of use necessary for unrestricted operation and maintenance of the project for its primary purpose, including the right to construct facilities or structures which are essential to the operation of the project. BLM likewise will retain such rights of use and access for multiple use management purposes, subject to Corps approval of structures located within Corps project boundary.

Section 8 -- Transfer of Obligations and Commitments. Under PL 67-874, approved October 23, 1962 (16 U.S.C. 460d) and under the project definition of the authorizing document (i.e., survey reports) the Corps has certain obligations and commitments with respect to land management. The Corps will identify these land management obligations and their estimated cost in its project survey reports or master plans. Where BLM assumes jurisdiction over land management of a water resource project under this agreement, it accepts these obligations and commitments and the responsibility to pursue them diligently in its programming and budgeting procedures. Any receipts will be deposited in accordance with authorizations cited in the supplemental agreement.

Section 9 – Implementation. This agreement is effective upon approval of the Secretaries of the Interior and the Army. Negotiations for a supplemental land management agreement may be initiated by representatives of either BLM or the Corps in accordance with Section 4; however, nothing contained herein is intended to delay the start of construction of any project. Functional supplements to further describe overall technical guidelines may be added to the agreement at any time. Nothing in this agreement shall affect those ongoing consultative and planning responsibilities exercised by the Corps of Engineers, the BLM, or other agencies of the Department of the Interior pursuant to the National Environmental Policy Act of 1969, the Fish and Wildlife Coordination Act, the Federal Water Project Recreation Act and other laws, executive orders, regulations, agreements and policies related to the development of water resources, nor is anything in this agreement intended to abrogate, supplant or violate the provisions of any such laws, executive orders, regulations, agreements and policies.

Section 10 – Coordination Meetings. Representatives of the Corps and BLM will meet periodically, both in the field and in Washington, at the call of either agency, to review status of planning and coordination of programs and operations.

Section 11 – Renegotiation. This agreement and any supplemental land management agreements are renegotiable at the option of either party.

APPROVED:	<u>(signature on file)</u>	<u>NOV 10 1972</u>
	Secretary of the Interior	Date

<u>(signature on file)</u>	<u>2 FEB 1973</u>
Secretary of the Army	Date

## SUPPLEMENTAL MEMORANDUM OF AGREEMENT

Bureau of Land Management, Oregon State Office and Army Corps of Engineers, Seattle District  
Relative to Management of Land and Water Resources, Chief Joseph Dam Project.

Section 1 - Purpose. This agreement supplements Memorandum of Agreement OR-70 of February 2, 1973, between the Secretaries of the Army and the Interior. Agreement OR-70 sets forth principles and procedures for coordination of Department of the Army, Corps of Engineers (COE) and Bureau of Land Management (BLM) programs where the COE constructs and operates water resource projects in and adjacent to lands administered by the BLM. This agreement replaces Memorandum of Agreement OR-142 of August 1, 1957, and affects the lands listed in Exhibit "A."

Section 2 - Authority. Memorandum of Agreement OR-70, Section 4, between Secretaries of the Army and the Interior.

Section 3 - Definition of Terms. Following is a definition of terms used in this agreement:

A. Guide Take Line - Dashed line shown on COE Real Estate Segment Drawings as the estimated maximum limit of erosion, sloughing or sliding which can be expected as a result of the project.

B. Project Boundary - Description by legal subdivision which delineates exterior limits of all lands withdrawn for Chief Joseph Project.

Section 4 - Multiple Use Resource Management. It is mutually agreed that the management of all resources will be administered as follows:

A. Range Management. The BLM will administer the grazing of livestock on all public lands within and adjacent to the project, with the exception of presently designated fenced parts of wildlife mitigation areas. Within those fenced areas, grazing by domestic livestock may be prohibited by the COE pursuant to notification and coordination with BLM. In the event that future changes of the fenced areas of the wildlife mitigation sites are appropriate, prior notification to and coordination with BLM will be accomplished. ~~{ - Should public use increase to the point that continued livestock GRAZING would be incompatible with the recreation use sites at River Mile 564 or Box Canyon, the COE may fence such areas and further grazing may be prohibited after notification to and coordination with BLM. - }~~

All grazing leases issued on lands within the project boundary will include conditions worded substantially as in Exhibit "B," reflecting maximum pool elevation on the leased lands, and waiver of the two year notice of grazing termination required by 43 CFR 4110.4-2.

B. Wildlife Management. The COE will be responsible for the development, operation, and maintenance of all wildlife mitigation areas identified in Exhibit "C." Management of wildlife habitat on public lands outside of these mitigation areas will continue under the administration of BLM. BLM habitat improvement within the project boundaries shall be coordinated with the COE prior to implementation.

C. Minerals Management. The BLM will manage all mineral leasing and salable mineral disposals on the public lands, consistent with the project and subject to concurrence by the COE.

D. Recreation Management. The BLM will manage the recreation use of the public land except at the ~~{ - Box Canyon site and the proposed site at River Mile 564 - }~~ { + Rocky Flats + }, and the wildlife mitigation sites specified in Exhibit "C." The BLM management will not include developing or maintaining any site with facilities which can be inhabited within the guide take line. Off-road vehicle use within the guide take line will be limited to existing roads, and roads built by the county, state, or

United States. ORV designation, posting, and enforcement will be the responsibility of BLM except on wildlife mitigation areas where the COE is responsible.

E. Fire Protection. The BLM will provide fire protection on BLM administered lands within the project boundary.

F. Public Access. Public access by road or trail to BLM administered lands will be the responsibility of the BLM. Access may be acquired in the normal BLM operating procedure including coordination with the COE for their comment and review. Public access by water to public lands within the Project shall also be the responsibility of BLM, except on the fenced areas of wildlife mitigation sites and the {~~two~~} {+ one +} identified recreational use site. The COE shall have responsibility for and control over public access to such excepted sites.

G. Cultural Resources. Management of cultural resources within the guide taking line is the responsibility of the COE. Cultural resources in other areas on public land within the Project boundary are the responsibility of the BLM.

H. Realty Actions. All realty actions within the Project boundary will be the responsibility of BLM and will require the consent of the COE.

Section 5 - Implementation. This agreement is effective upon approval by the BLM State Director and the COE District Engineer. It will remain in effect indefinitely unless modified, cancelled or superseded by agreement of the BLM State Director and the COE District Engineer.

Section 6 - Coordination. This agreement may be revised by consent of both parties. A joint meeting may be requested by either party at anytime, but at least once every two years.

APPROVED:

U.S. Department of Interior  
Bureau of Land Management

<u>(signature on file)</u>	<u>DEC 17, 1999</u>
Joseph Buesing	Date
District Manager	

U.S. Department of the Army  
Corps of Engineers

<u>(signature on file)</u>	<u>JAN 31, 2000</u>
James M. Rigsby	Date
Colonel, Corps of Engineers	
Seattle District	

**EXHIBIT A**  
**COOPERATIVE AGREEMENT LANDS**  
**Chief Joseph Dam Project**

T 29 N, R 26 E, WM

Sec 3: Lots 3, 4 & 5 NE<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>

Sec 9: SW<sup>4</sup>SW

Sec 30: Lot 2

T 30 N, R 26 E, WM

Sec 24: Lot 6

Sec 25: Lots 3 & 4, NW<sup>4</sup>NE<sup>4</sup>

Sec 34: Lot 4

Sec 35: Lots 4, 5, 6, & 7, SW<sup>4</sup>SE<sup>4</sup>

T 30 N, R 27 E, W M

Sec 19: Lot 7

Sec 20: Lot 5

Sec 27: Lot 4

Sec 28: Lots 2, 3, 4, 5 & 6, SE<sup>4</sup>SE<sup>4</sup>

Sec 29: Lots 1 & 2, NE<sup>4</sup>NW<sup>4</sup>

Sec 34: Lots 3, 4, 5, & 6, SW<sup>4</sup>NW<sup>4</sup>, NE<sup>4</sup>SW<sup>4</sup>

Sec 35: Lot 5

T 30 N, R 28 E, WM

Sec 9: Lot 2, SE<sup>4</sup>SE<sup>4</sup>

Sec 13: Lot 2

Sec 14: Lots 1, 2 & 3, NE<sup>4</sup>SW<sup>4</sup>, NW<sup>4</sup>SE<sup>4</sup>

Sec 17: Lots 1 & 2

Sec 20: Lots 1, 2, 3 & 4

Sec 21: NW<sup>4</sup>NW<sup>4</sup>

Sec 29: Lots 1, 2, 3 & 4

Sec 31: Lots 7, 8 & 9

Sec 32: Lots 1, 2 & 3

T 30 N, R 29 E, WM

Sec 7: Lots 7 & 9

T 31 N, R 30 E, WM

Sec 31: Lot 7

**Totaling 2,216.81 acres.**

**EXHIBIT B**  
[Example Form]

**Chief Joseph Dam Project**

**Suggested amendment to existing grazing leases:**

The lease, Grazing Record No. \_\_\_\_\_ issued to  
\_\_\_\_\_ on \_\_\_\_\_, 19\_\_\_\_ for a term of \_\_\_\_\_  
years and covering a total of \_\_\_\_\_ acres of land, is hereby amended by adding the  
following stipulations:

1. As to that portion of the leased lands lying within the Chief Joseph Dam Project, the Corps of Engineers (COE) is guaranteed the perpetual right to overflow, flood, submerge, cause erosion, sloughing or slides to all lands within the “guide take line” of the Chief Joseph Dam and Reservoir Project which was authorized by the Acts of Congress approved July 24, 1946 (Public Law 525) and June 30, 1948 (Public Law 858). The “guide take line” is shown on the COE Real Estate Segments Drawings for the Chief Joseph Additional Units Project; copies for lands affected in this lease are attached.
2. Acceptance of this lease indicates that the lessee agrees to waive the two-year prior notification for grazing use termination required by 43 CFR 4110.4-2.

**EXHIBIT C**  
**CHIEF JOSEPH PROJECT PROPOSED WILDLIFE MITIGATION SITES**  
(See COE *Design Memorandum 52: Wildlife and Threatened Species Mitigation* for site locations)

- Site 6: T 30 N, R 26 E, Sec 25, Lots 6 and 7:  
8 raptor poles.
- Alternate Site #1: T 30 N, R 26 E, Sec 35, SW<sup>4</sup>SE<sup>4</sup>:  
No site drawings for this mitigation location delineating the narrative:  
(a) fence 11 acres to exclude livestock.  
(b) plant and irrigate 4.6 acres of enclosure.
- Part of Site 10: T 30 N, R 27 E, Secs 28 and 34:  
Lone Pine Island goose boxes and pasture.
- Site #7: T 30 N, R 27 E, Sec 29, NE<sup>4</sup>NW<sup>4</sup>:  
(a) 2 raptor poles on parcel.  
(b) all 40 acres included in fence boundary to exclude livestock.
- {+ Expanded Site #7: T 30 N, R 27 E, Sec 28:  
Part of lots 5, 6 and SE<sup>4</sup>NE<sup>4</sup> totaling approx. 20 acres. +}
- Expanded Site #10: T 30 N, R 27 E, Sec 34, NE<sup>4</sup>SW<sup>4</sup>, SW<sup>4</sup>NW<sup>4</sup>:  
No site drawings for this mitigation location delineating the narrative:  
(a) fence 10 acres from livestock.  
(b) plant and irrigate 4 acres.
- Site 11: T 30 N, R 28 E, Sec 31:  
Allen Bar: fence 55 acres; irrigate and plant 22 acres  
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**APPENDIX C**  
**RESOURCE USE:**

**VISITATION**

**ENVIRONMENTAL COMPLIANCE**  
**PUBLICATIONS**



# VISITATION & VISITOR SPENDING PROFILE

B. Ecker CJ-Visitation.doc Rev. 9/1/01

CHIEF JOSEPH DAM (CJD) VISITATION							CJD SPENDING PROFILE		
Fiscal Year (Oct-Sept)	CJD Visits <sup>1</sup>	CJD Visitor Hours <sup>1</sup>	Bridgeport St Pk Visits <sup>1</sup>	Bridgeport St Pk Visitor Hours <sup>1</sup>	Total Visits <sup>1</sup>	Total Vis Hrs <sup>1</sup>	Durable Goods Spending <sup>3</sup>	Trip Spending <sup>3</sup>	Total Trip Spending <sup>3</sup>
Visitation from 1960 through 1989 was reported on a calendar year basis.							Data not calculated prior to 1994		
Sept 30, 1990	116,677	192,124	88,559	221,400	205,236	413,524			
Sept 30, 1991	136,219	212,032	67,427	168,569	203,646	380,601			
Sept 30, 1992	123,527	186,338	73,969	184,925	197,496	371,263			
Sept 30, 1993	128,090	200,358	68,741	171,855	196,831	372,213			
Sept 30, 1994	128,268	198,099	65,781	164,456	194,049	362,555	\$11,845,294	\$5,594,122	\$17,439,416
Sept 30, 1995	138,652	212,133	67,783	169,460	206,435	381,593	\$12,503,438	\$5,951,191	\$18,454,628
Sept 30, 1996	137,505	205,010	65,173	162,935	202,678	367,945	\$12,513,644	\$5,966,658	\$18,480,302
Sept 30, 1997 <sup>2</sup>	117,096	229,919	31,102	1,093,284	133,337 <sup>2</sup>	1,330,301 <sup>2</sup>	\$8,126,569	\$3,675,335	\$9,801,903
Sept 30, 1998	117,567	236,465	32,586	1,115,114	136,936	1,358,286	\$6,533,123	\$3,766,176	\$10,299,299
Sept 30, 1999	127,012	240,762	33,325	1,134,193	146,121	1,380,351	\$6,605,208	\$3,975,067	\$10,580,275
Sept 30, 2000	105,501	231,890	35,322	1,051,125	140,823	1,283,015	\$6,423,133	\$3,785,360	\$10,208,493
Sept 30, 2001							\$	\$	\$

<sup>1</sup>A Visit represents one person in an area participating in one or more recreational activities during their visit to the lake or reservoir. A Visitor Hour is one or more people in an area participating in one or more recreational activities during 60 aggregate minutes. A Visitor Hour is a more accurate measurement by multiplying the total number of people under Visits by a calculated average number of hours spent recreating on reservoir lands. Visitor Hours is where you'll see the impact on a facility (not under Visits) as it determines the amount of use in hours. A Visitor Day is 12 Visitor Hours and is not recorded on this table.

<sup>2</sup>In 1997, visitation calculation methods changed to the Visitation Estimation and Reporting System (VERS) produced by the Corps' Waterways Experiment Station. Total Visits and Total Visitor Hours may not be the sum of the CJD and Bridgeport State Park areas due to visitors recreating in more than one area during a visitation survey which is later calculated back into the Total Visits and Total Visitor Hours. It's uncertain whether this method of calculating visitation is more or less accurate than the previous method and may be subjected to flaws during survey preparation (such as location of survey sites, survey seasons, survey times and days), during the actual survey (computer failures, incorrect backup methods, late or idle surveyors), and during survey analysis (lost data, data merging incorrectly, invalid results from too few participants).

<sup>3</sup>Estimated recreational spending formulas derived by the Waterways Experiment Station from Corps visitation statistics and national spending profiles. Dollars represent total trip spending by recreating visitors (Visits) for their entire trip, not just in the area. In 1994, approximately \$263 million were spent by visitors engaged in recreation at Corps projects in the state of Washington. Visitors spent \$66 per dollar of O&M recreation cost incurred by the Corps (per *Economic Effects of Recreation at Corps Projects, 1994 Data*).

WASHINGTON STATE <sup>4</sup>									
Calendar Year 1998	Visits by In-State Visitors	Visits by Out-of-State Visitors	Total Visits	Average Stay	Average Party Size	Ave Daily Spent per Party	Total Trip Spend'g in WA <sup>5</sup>	Trip Spend'g in Okanogan Co.	Trip Spend'g in Douglas Co.
Washington State	43.1M	40.7M	83.7M	4.3 days	2.7 people	\$145	\$7,819,000,000	\$104,500,000	\$21,300,000
Staying in Commercial Accommodations	3.8M	8.5M	12.3M	3.8 days	2.5 people	\$245	\$3,646,000,000	\$38,800,000	\$5,100,000
Staying in Public Campgrounds	1.9M	0.8M	2.7M	4.0 days	3.1 people	\$90	\$303,000,000	\$16,100,000	\$1,200,000
Staying in Private Campgrounds	1.1M	0.5M	1.6M	5.2 days	3.0 people	\$114	\$285,000,000	\$15,100,000	\$400,000
Day Travel Only	31.8M	21.4M	53.1M	0.8 days	3.0 people	\$114	\$1,421,000,000	\$16,800,000	\$3,900,000

<sup>4</sup>Extracted from *Washington State County Travel Impact 1993-1999*, compiled by Dean Runyan Associates for the Washington State Office of Trade and Economic Development, Washington State Tourism, September 2000 (Internet [www.dra-research.com/wa.htm](http://www.dra-research.com/wa.htm)).

<sup>5</sup>Total Trip Spending includes travel spending by those travelers also staying in private and vacation homes, which is not displayed separately above.

(continued next page)

<u>Population</u>	<u>WA State</u>	<u>Okanogan County</u>	<u>Douglas County</u>
4/1/1990	4.8M <sup>6</sup>	33,350 <sup>7</sup>	26,205 <sup>7</sup>
4/1/2000 <sup>7</sup>	5.894M	39,564	32,800
4/1/2001 <sup>7</sup>	5.974M	39,700	32,800
2005 projected <sup>7</sup>	6.291M	41,858	36,557
2010 projected <sup>7</sup>	6.693M	44,061	39,596
2020 projected <sup>7</sup>	7.610M	48,385	45,969
# Jobs Generated by Travel Spending <sup>4</sup>	126,600	1,820	370
<sup>6</sup> US Census Bureau (Internet <a href="http://www.census.gov">www.census.gov</a> ).			
<sup>7</sup> Washington State Office of Financial Management (Internet <a href="http://www.ofm.wa.gov">www.ofm.wa.gov</a> ). Projections to 2005 and 2010 are for Medium Series.			

**Table C-1: Visitation and visitor spending profiles for Chief Joseph Dam and Washington State.**

In Washington State, day visitors made an average of nine trips per year and overnight visitors made an average of four trips per year. The 83.7 million trips taken in the state during 1997 were made by about 13.1 million individual visitors. Nearly half (51.3 percent) of all visits in 1998 were made by residents traveling within the state, amounting to 42.9 million visitors. However, due to higher proportion of day trips and day travelers' lower average daily spending, Washington residents account for a smaller share of the total spending (38.5 percent of total travel expenditures made in the state.) Residency of visitors to Chief Joseph Dam is summarized in a table available at Chief Joseph Dam.

In 1987, the Corps of Engineers changed reported visitation from Visits and Recreation Days to Visits and Visitor Hours which altered volume numbers. Also, a new visitor orientation area was constructed with exhibits and directional signage added in 1988. The summer of 1988 marked the dedication of a newly relocated visitor center to the east end of the powerhouse, and an official visitor route was established that enabled tourists to partake in self-guided tours around Chief Joseph Dam lands, including stops at viewpoints on both the left and right banks. Bridgeport State Park included golfers in their visitation in 1990, but the park experienced some decline in 1991 due to problems with data collection. By 1993, all Seattle District projects reported visitation in Visits, Visitor Hours, and Visitor Days.

Visitor volume and composition have been studied in several visitor surveys. In the summer of 1983, visitors exiting Chief Joseph Dam lands in a vehicle were stopped and guided through a series of questions. Responses were coded and recorded by hand on a preprinted form. Analysis was conducted on a mainframe computer using a program written by the Corps' Waterways Experiment Station. It required considerable instructions to computer personnel and time to correct surveying errors, but when completed it provided information on how many people used Chief Joseph Dam lands for recreational purposes (as opposed to those using the lands for commercial and daily nonrecreational usage), for how long, and what types of activities in which they participated.

Spring and summer visitor surveys were conducted in 1985, and spring-summer and fall-winter surveys conducted in 1990. The 1990 survey was analyzed using a computer program written by the Waterways Experiment Station. The Visitation Estimation and Reporting System (VERS) was written with two-parts—the Direct Data Entry System (DDES) which allows direct entry of visitor responses into a laptop computer, and an analysis program for on-site use. Because the program was new to the Seattle District, visitor responses from the 1990 survey were hand recorded on the previous paper form, then analyzed with the new VERS program. Analysis was not 100 percent compatible between the two systems; thus, visitation currently being collected may not be accurate. However, the VERS is a means to standardizing the Corps' visitation reporting methods nationwide. It remains the best and most consistent visitation reporting system in use since the 1960's. Survey data showing visitor activities participated in can be found in Table C-2.

CHIEF JOSEPH DAM ACTIVITY PROFILE							
Average Activity Participation				Average Activity Participation			
	1983	1985	1990 <sup>1</sup>		1983	1985	1990 <sup>1</sup>
<b>SPRING</b>				<b>SUMMER</b>			
Sightseeing <sup>2</sup>		19%	63%	Sightseeing <sup>2</sup>	41%	7%	63%
Fishing <sup>3</sup>		22%	14%	Fishing <sup>3</sup>	4%	5%	14%
Camping		0	13%	Camping	10%	14%	13%
Misc. Other <sup>4</sup>		59%	8%	Misc. Other <sup>4</sup>	36%	19%	8%
Picnicking		4%	6%	Picnicking	6%	1%	6%
Swimming		0	5%	Swimming	4%	3%	5%
Waterskiing <sup>5</sup>		0	2%	Waterskiing <sup>5</sup>	0	0	2%
Watercraft <sup>6</sup>		7%	0	Watercraft <sup>6</sup>	6%	7%	0
Hiking		2%	[0] <sup>7</sup>	Hiking	4%	0	[0] <sup>7</sup>
<b>Average Overnight and Day Use</b>				<b>Average Overnight and Day Use</b>			
No. Nights				No. Nights			
Per Person		0	0.4	Per Person	0.2	0.2	0.4
No. Hours				No. Hours			
Per Person		2.1	1.4	Per Person	1.4	1.8	1.4
<b>FALL</b>				<b>WINTER</b>			
Sightseeing <sup>2</sup>			52%	Sightseeing <sup>2</sup>			52%
Picnicking			26%	Picnicking			26%
Fishing <sup>3</sup>			21%	Fishing <sup>3</sup>			21%
Watercraft <sup>6</sup>			9%	Watercraft <sup>6</sup>			9%
Camping			3%	Camping			3%
Hunting			1%	Hunting			1%
Misc. Other <sup>4</sup>			1%	Misc. Other <sup>4</sup>			1%
Swimming			0	Swimming			0
Waterskiing <sup>5</sup>			0	Waterskiing <sup>5</sup>			0
Hiking			[0] <sup>7</sup>	Hiking			[0] <sup>7</sup>
<b>Average Overnight and Day Use</b>				<b>Average Overnight and Day Use</b>			
No. Nights				No. Nights			
Per Person			0.1	Per Person			0.1
No. Hours				No. Hours			
Per Person			1.3	Per Person			1.3
<sup>1</sup> Visitor surveys conducted in 1990 were for the new two-season year—spring/summer and fall/winter, rather than a four-season year. <sup>2</sup> Sightseers are visitors who do not participate in any other activity and includes drive-through's; visits to a visitor center, overlook and or viewing area or taking tours; photography; and visits to only the restroom or use of the showers only. <sup>3</sup> Fishing includes from a boat, from the shore, and ice fishing. Fishing From a Boat is also included under the Watercraft activity. <sup>4</sup> Miscellaneous Other includes all other activities not listed in the preformatted survey questions. Such activities might include bird watching, painting, reading, walking, dog walking, hiking and ORV riding. <sup>5</sup> Waterskiing is also included under the Watercraft activity. <sup>6</sup> Watercraft activities include pleasure boating, sailing, wind surfing, sail boarding, jet skiing, inner tubing, rafting, canoeing, kayaking, waterskiing, and fishing from a boat. Waterskiing is also included under the Waterskiing activity. Fishing From a Boat is also included under Fishing. <sup>7</sup> The VERS analysis combines Hiking with Miscellaneous Other. However, no visitors reported Hiking as their activity.							

**Table C-2: Visitor activity profile was compiled from three visitor surveys.**

According to the *1990-1995 Washington SCORP* and the *National Recreation Lakes Study* (Internet [www.doi.gov/nrls](http://www.doi.gov/nrls)), the most popular and most rapidly growing *activities* are those that take advantage of trails for walking, jogging, bicycling, off-road motorcycling, horseback riding, and hiking. However, facilities that include water access is the one *setting* the public wants more than any other type of setting. State and local governments share the bulk of the responsibility of providing water access. For all agencies, planning and development should consider priority to projects that serve multiple objectives, including recreation access, preservation of habitat, and watershed restoration, as well as providing a trail opportunity on, to or along the water. Access should emphasize pedestrian facilities (footpaths or trails, picnic sites, hand launch facilities, water's-edge viewpoints with interpretive features). For motorized boating, launching ramps and transient facilities are clear priorities. Watershed planning should include identification of sites or areas appropriate for public water access.

Parks are integral to a community's infrastructure. Agencies involved with the direct contact of children, youth, and families can have a positive influence on social issues. It is not the purpose of Chief Joseph Dam lands or the mission of their personnel to provide such city- or county-type facilities or programs, but how the land is used and developed can be integrated to fill some voids. The most frequently selected amenities statewide, in order, include natural areas, unpaved (barrier-free) trails, playgrounds, beaches on any type of water, picnic areas, paved (barrier-free) trails, outdoor swimming pools, water viewpoints, boating access, and sport fields and courts (baseball/softball, basketball, soccer, tennis) (1995 SCORP).

Natural areas, enjoying nature, and interacting with wildlife are growing in public appreciation. Consumptive activities, like hunting, are being joined by nonconsumptive activities, such as wildlife observation and photography. Natural areas may contain rare or vanishing flora and fauna, or geological, natural historical, or similar features of scientific or education value.

## ENVIRONMENTAL COMPLIANCE PUBLICATIONS

This Chief Joseph Dam (CJD) publications list (arranged by date of publication) is provided to show compliance with the federal laws listed in Section 3.6, Environmental Compliance. Additional analyses have been published for public use facilities and areas that are not included here. This list is not all inclusive.

### Operations and Maintenance

*CJD Design Analysis for First Stage Construction*, U.S. Army Corps of Engineers, Seattle District, March 1950. This publication was not required under federal law in 1950, but is being included in this list.

*DM 33B: CJD Master Plan for Development and Management of Reservoir Lands*, U.S. Army Corps of Engineers, July 1964.

*DM 35: CJD Additional Units 17-27 General*, U.S. Army Corps of Engineers, Seattle District, December 1967.

*Chief Joseph Dam Additional Units Final Environmental Impact Statement* U.S. Army Corps of Engineers, Seattle District, August 1971. Filed with the Council on Environmental Quality February 2, 1972.

*Final Supplement to Environmental Impact Statement, Chief Joseph Dam Additional Units, Operation and Maintenance*, U.S. Army Corps of Engineers, Seattle District, February 1975. Includes operations and maintenance activities as it presently existed as well as for the proposed expanded project.

*Environmental Impact Statement for CJD Additional Units Beyond 27*, U.S. Army Corps of Engineers, Seattle District, draft 1977. No final version was published; project was eliminated.

*Columbia Basin Water Withdrawal Environmental Review*, U.S. Army Corps of Engineers, Seattle District, 1980.

*DM 57: CJD-Rufus Woods Lake Project Master Plan*, U.S. Army Corps of Engineers, Seattle District, draft October 1988. No final version was published.

*CJD Pool Raise Phase I Feasibility Study*, U.S. Army Corps of Engineers, Seattle District, draft January 1997.

### Fish and Wildlife

*Inventory of Riparian Habitats and Associated Wildlife Along the Columbia and Snake Rivers, Mid-Columbia River, Vol. IVB*, U.S. Army Corps of Engineers, North Pacific Division, 1976.

*An Assessment of the Impact on the Wildlife and Fisheries Resource of Rufus Woods Reservoir Expected from the Raising of Chief Joseph Dam from 946 to 956 ft. m.s.l.,* Dr. A.W. Erickson, et al, College of Fisheries, University of Washington, March 1977. Report to the Colville Tribal Council of the Colville Indian Reservation, Nespelem, Washington, and the Seattle District Corps of Engineers.

*An Assessment of CJD – Unit to 27 Project Impacts and their Mitigation and Compensation by means of the Habitat Unit Evaluation Procedure,* Washington State Department of Game (now WDFW), Olympia, Washington, 1977

*Evaluation of Potential Wildlife Mitigation Sites and their Development,* Washington State Department of Game (now WDFW), Olympia, Washington, 1977.

*DM 52: CJD Additional Units, Columbia River, Washington, Wildlife and Threatened Species Mitigation,* U.S. Army Corps of Engineers, Seattle District, October 1980.

*Evaluation of Wildlife Mitigation Sites at the CJD Project for the U.S. Army Corps of Engineers,* Shapiro and Associates, 1987.

*Evaluation of Wildlife Mitigation Sites at the CJD Project for the U.S. Army Corps of Engineers,* Shapiro and Associates, 1989.

*Wildlife Habitat Impact Assessment, CJD Project,* Washington State Department of Wildlife (now WDFW) and Colville Confederated Tribes, draft November 1991.

*Resident Fish and Wildlife Amendments to the Columbia River Basin Fish and Wildlife Program (Phase 4), 93-20,* Northwest Power Planning Council, Portland, Oregon, November 1993.

*Response to Comments on Phase 4 Rule, 93-21,* Northwest Power Planning Council, Portland, Oregon, December 14, 1993.

#### Cultural Resources

*Supplement 2 to DM 38: Cultural Resources Curation,* U.S. Army Corps of Engineers, Seattle District, February 1984.

*Archaeological Inventory and Testing of Prehistoric Habitation sites, CJD Project,* J.V. Jermann, University of Washington Office of Public Archaeology, 1985.

*Summary of Results, CJD, Cultural Resources Project,* S.K. Campbell, University of Washington Office of Public Archaeology, 1985.

#### Recreation

*DM 33C: CJD Public Use Development Plan,* U.S. Army Corps of Engineers, Seattle District, July 1975.



*DM 39: CJD Land Restoration and Visitor Accommodations*, U.S. Army Corps of Engineers, Seattle District, June 1977.

*Supplement 1 to DM 33C: CJD Public Use Development Plan*, U.S. Army Corps of Engineers, Seattle District, April 1978.

Americans with Disabilities

*CJD ADA Evaluation*, U.S. Army Corps of Engineers, Seattle District, June 1995.

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**APPENDIX D**  
**SPECIES INVENTORY:**

**PLANTS**

**BIRDS**

**ANIMALS**

**FISH**

## PLANTS OF CHIEF JOSEPH DAM BY TYPE

<u>TYPE</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
<b>Trees</b>	Rocky Mountain maple	<i>Acer glabrum</i>
	mountain alder	<i>Alnus incana</i>
	water birch	<i>Betula occidentalis</i>
	Columbia hawthorn	<i>Crataegus columbiana</i>
	Russian olive	<i>Eleagnus angustifolia</i>
	western juniper	<i>Juniperus occidentalis</i>
	Rocky Mountain juniper	<i>Juniperus scopulorum</i>
	ponderosa pine	<i>Pinus ponderosa</i>
	quaking aspen	<i>Populus tremuloides</i>
	black cottonwood	<i>Populus trichocarpa</i>
	Douglas fir	<i>Pseudotsuga menziesii</i>
	black locust	<i>Robinia pseudoacacia</i>
	willow	<i>Salix sp.</i>
	coyote willow	<i>Salix exigua exigua</i>
	Siberian elm	<i>Ulmus pumila</i>
<b>Shrubs</b>	Saskatoon serviceberry	<i>Amelanchier alnifolia</i>
	big sagebrush	<i>Artemisia tridentata</i>
	threetip sagebrush	<i>Artemisia tripartita</i>
	hollyleaved barberry, tall	<i>Berberis aquifolium</i>
	Oregongrape	
	low Oregongrape	<i>Berberis repens</i>
	gray rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>
	green rabbitbrush	<i>Chrysothamnus viscidiflorus</i>
	red-osier dogwood	<i>Cornus stolonifera</i>
	alpine laurel	<i>Kalmia microphylla</i>
	Russian olive	<i>Elaeagnus angustifolia</i>
	creambush ocean-spray	<i>Holodiscus discolor</i>
	prickly phlox	<i>Leptodactylon pungens</i>
	Oregon boxwood	<i>Pachistima myrsinites</i>
	Lewis' mockorange	<i>Philadelphus lewisii</i>
	mallow ninebark	<i>Physocarpus malvacea</i>
	gland cinquefoil	<i>Potentilla glandulosa</i>
	common chokecherry	<i>Prunus virginiana</i>
	antelope-brush, bitter brush	<i>Purshia tridentata</i>
	golden current	<i>Ribes aureum</i>
	wax currant	<i>Ribes cereum</i>
	sticky currant	<i>Ribes viscosissimum</i>
	smooth sumac	<i>Rhus glabra</i>
	poison ivy	<i>Rhus radicans</i>
	Skunkbush sumac	<i>Rhus trilobata</i>
	rose	<i>Rosa sp.</i>
	prickly rose	<i>Rosa acicularis</i>
	little wild rose	<i>Rosa gymnocarpa</i>
	Woods' rose	<i>Rosa woodsii</i>
	American red raspberry	<i>Rubus idaeus</i>

<b><u>TYPE</u></b>	<b><u>COMMON NAME</u></b>	<b><u>SCIENTIFIC NAME</u></b>
<b>Shrubs, con't.</b>	roughfruit berry	<i>Rubus lasiococcus</i>
	whitebark raspberry	<i>Rubus leucodermis</i>
	Himalayan blackberry	<i>Rubus discolor</i>
	blue elderberry	<i>Sambucus cerulea</i>
	European grapevine	<i>Vitis vinifera</i>
	thimbleberry	<i>Rubus parviflorus</i> & <i>Rubus sp.</i>
	Bebb willow	<i>Salix bebbiana</i>
	sandbar willow	<i>Salix exigua</i>
	Pacific willow	<i>Salix lasiandra (lasiandra)</i>
	Scouler's willow	<i>Salix scouleriana</i>
	white spirea	<i>Spiraea betulifolia</i>
	common snowberry	<i>Symphoricarpos albus</i>
<b>Forbs</b>	common yarrow	<i>Achillea millefolium</i>
	mountain dandelion	<i>Agoseris glauca</i> & <i>Agoseris sp.</i>
	varied-leaved agoseris	<i>Agoseris heterophylla</i>
	nodding onion	<i>Allium cernuum</i>
	redroot pigweed	<i>Amaranthus retroflexus</i>
	fiddleneck	<i>Amsinckia spp.</i>
	Menzies' fiddleneck	<i>Amsinckia intermediata</i>
	pearly everlasting	<i>Anaphalis margaritacea</i>
	littleleaf pussytoes	<i>Antennaria microphylla</i>
	dog fennel (Mayweed)	<i>Anthemis cotula</i>
	spreading dogbane	<i>Apocynum androsaemifolium</i>
	western columbine	<i>Aquilegia formosa</i>
	rock cress	<i>Arabis divaricarpa</i>
	Holboell's rockcress	<i>Arabis holboellii</i>
	littleleaf rockcress	<i>Arabis microphylla</i>
	lesser burdock	<i>Arctium minus</i>
	mountain sandwort	<i>Arenaria capillaris</i>
	desert sandwort	<i>Arenaria hookeri</i>
	heartleaf arnica	<i>Arnica cordifolia (cordifolia)</i>
	Douglas' sagewort	<i>Artemisia douglasiana</i>
	tarragon	<i>Artemisia dracunculus</i>
	western wormwood	<i>Artemisia ludoviciana</i>
	scabland sagebrush	<i>Artemisia rigida</i>
	common mugwort	<i>Artemisia vulgaris</i>
	showy milkweed	<i>Asclepias speciosa</i>
	garden asparagus	<i>Asparagus officinalis</i>
	madwort	<i>Asperugo procumbens</i>
	other asters	<i>Aster sp.</i>
	Rocky Mountain aster	<i>Aster ascendens</i>
	western aster	<i>Aster occidentalis</i>
	Douglas' aster	<i>Aster subspicatus</i>
	other milkweeds	<i>Astragalus spp.</i>
	purple milkvetch	<i>Astragalus agrestis</i>
	Pursh's milkvetch	<i>Astragalus purshii</i>
	arrowleaf balsamroot	<i>Balsamorhiza sagittata</i>

<b><u>TYPE</u></b>	<b><u>COMMON NAME</u></b>	<b><u>SCIENTIFIC NAME</u></b>
<b>Forbs, con't.</b>	berula	<i>Berula erecta</i>
	nodding beggar-ticks	<i>Bidens cernua</i>
	Douglas' brodiaea	<i>Brodiaea douglasii</i>
	mariposa tulip	<i>Calochortus sp.</i>
	green-banded mariposa lily	<i>Calochortus macrocarpus</i>
	segolily	<i>Calochortus nuttallii</i>
	small camas	<i>Camassia quamash</i>
	shepherd's purse	<i>Capsella bursa-pastoris</i>
	hoary pepperwort	<i>Cardaria drapa</i>
	Indian paintbrush	<i>Castilleja sp.</i>
	desert paintbrush	<i>Castilleja chromosa</i>
	annual paintbrush	<i>Castilleja exilis</i>
	scarlet Indian paintbrush	<i>Castilleja miniata</i>
	Thompson's paintbrush	<i>Castilleja thompsonii</i>
	diffuse knapweed	<i>Centaurea diffusa</i>
	spotted knapweed	<i>Centaurea maculosa</i>
	Russian knapweed	<i>Centaurea repens</i>
	yellow starthistle	<i>Centaurea solstitialis</i>
	field chickweed	<i>Cerastium arvense</i>
	nodding chickweed	<i>Cerastium nutans</i>
	false yarrow	<i>Chaenactis douglasii</i>
	lambsquarter	<i>Chenopodium album</i>
	skeletonweed	<i>Chondrilla juncea</i>
	rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>
	chicory	<i>Cichorium intybus</i>
	Canadian thistle	<i>Cirsium arvense</i>
	bull thistle	<i>Cirsium vulgare</i>
	clarkia	<i>Clarkia sp.</i>
	elkhorns clarkia	<i>Clarkia pulchella</i>
	miner's lettuce	<i>Claytonia (Montia) perfoliata</i>
	western virgin's bower	<i>Clematis ligusticifolia</i>
	smallflower blue eyed Mary	<i>Collinsia parviflora</i>
	large-flowered collomia	<i>Collomia grandiflora</i>
	narrow-leaved collomia	<i>Collomia linearis</i>
	bastard toadflax	<i>Comandra umbellata</i>
	field morning-glory, small bindweed	<i>Convolvulus arvensis</i>
	Canadian horseweed	<i>Conyza canadensis canadensis</i>
	Columbia coreopsis	<i>Coreopsis atkinsoniana</i>
	hawkweed	<i>Crepis sp.</i>
	long-leaved hawks beard	<i>Crepis acuminatus</i>
	cryptantha	<i>Cryptantha sp.</i>
	Torrey's catseye	<i>Cryptantha torreyana</i>
	turpentine cymopterus	<i>Cymopterus terebinthinus</i>
	dogtail	<i>Cynosurus echinoides</i>
	brittle bladderfern	<i>Cystopteris fragilis</i>
	Nuttall's larkspur	<i>Delphinium nuttallianum</i>
	mountain tansymustard	<i>Descurainia sophia</i>
	teasel	<i>Dipsicus sylvestris</i>

<b><u>TYPE</u></b>	<b><u>COMMON NAME</u></b>	<b><u>SCIENTIFIC NAME</u></b>
<b>Forbs, con't.</b>	shooting star	<i>Dodecatheon spp.</i>
	spring whitlow-grass	<i>Draba verna</i>
	Morman tea	<i>Ephedra viridis</i>
	fireweed	<i>Epilobium angustifolium</i>
	smooth willowweed	<i>Epilobium glaberrimum</i>
	giant helleborine	<i>Epipactis gigantea</i>
	field horsetail	<i>Equisetum arvense</i>
	scouringrush horsetail	<i>Equisetum hyemale</i>
	cutleaf daisy	<i>Erigeron compositus</i>
	threadleaf fleabane	<i>Erigeron filifolius</i>
	arctic alpine fleabane	<i>Erigeron humilis</i>
	lineleaf fleabane	<i>Erigeron linearis</i>
	snow eriogonum	<i>Erigeron niveum</i>
	Philadelphia fleabane	<i>Erigeron philadelphicus</i>
	shaggy fleabane	<i>Erigeron pumilis</i>
	Douglas' buckwheat	<i>Eriogonum douglasii</i>
	Wyeth buckwheat	<i>Eriogonum heracleoides</i>
	snow buckwheat	<i>Eriogonum niveum</i>
	strict buckwheat	<i>Eriogonum strictum</i>
	thyme buckwheat	<i>Eriogonum thymoides</i>
	woolly buckwheat	<i>Eriophyllum lanatum</i>
	storksbill	<i>Erodium cicutarium</i>
	wallflower	<i>Erysimum sp.</i>
	prairie rocket	<i>Erysimum asperum</i>
	field filago	<i>Filago arvensis</i>
	Virginia strawberry	<i>Fragaria virginiana</i>
	yellow bell	<i>Fritillaria pudica</i>
	gaillardia	<i>Gaillardia aristata</i>
	beadstraw	<i>Galium sp.</i>
	stickywilly	<i>Galium aparine</i>
	rough bedstraw	<i>Galium asperum</i>
	twinleaf bedstraw	<i>Galium bifolium</i>
	northern bedstraw	<i>Galium boreale</i>
	threepetal bedstraw	<i>Galium trifidum</i>
	fragrant bedstraw	<i>Galium triflorum</i>
	sticky geranium	<i>Geranium viscosissimum</i>
	prairiesmoke	<i>Geum triflorum</i>
	American licorice	<i>Glycyrrhiza lepidota</i>
	baby's breath	<i>Gypsophila paniculata</i>
	sagebrush stickseed	<i>Hackelia ciliata</i>
	showy stickseed	<i>Hackelia floribunda</i>
	blue stickseed	<i>Hackelia micrantha</i>
	oneflower helianthella	<i>Helianthella uniflora</i>
	common sunflower	<i>Helianthus annuus</i>
	common cow-parsnip	<i>Heracleum lanatum</i>
	roundleaf alumroot	<i>Heuchera cylindrica</i>
	white hawkweed	<i>Hieracium albiflorum</i>
	western St. John's-wort	<i>Hypericum formosum</i>

<b><u>TYPE</u></b>	<b><u>COMMON NAME</u></b>	<b><u>SCIENTIFIC NAME</u></b>
<b>Forbs, con't.</b>	common St. John's-wort	<i>Hypericum perforatum</i>
	iris	<i>Iris sp.</i>
	blue flag	<i>Iris missouriensis</i>
	yellow flag	<i>Iris pseudacorus</i>
	tall marsh-elder	<i>Iva xanthifolia</i>
	kochia	<i>Kochia scoparia</i>
	tall blue lettuce	<i>Lactuca biennis</i>
	blue lettuce	<i>Lactuca pulchella</i>
	prickly lettuce	<i>Lactuca serriola</i>
	dead-nettle	<i>Lamium amplexicaule</i>
	blue lettuce	<i>Lactuca pulchella</i>
	peppergrass	<i>Lepidium sp.</i>
	yellow-flowered peppergrass	<i>Lepidium perfoliatum</i>
	granite pricklygilia	<i>Leptodactylon pungens</i>
	bladderpod	<i>Lesquerella douglasii</i>
	Oregon bitterroot	<i>Lewisia rediviva</i>
	Dalmatian toadflax	<i>Linaria dalmatica</i>
	wild flax	<i>Linum perenne</i>
	small-flowered fringe cup	<i>Lithophragma parviflora</i>
	western gromwell	<i>Lithospermum ruderales</i>
	laceleaf leptotaenia	<i>Lomatium dissectum</i>
	Coeur d'Alene lomatium	<i>Lomatium farinosum</i>
	Gray's lomatium	<i>Lomatium grayi</i>
	bigseed lomatium	<i>Lomatium macrocarpum</i>
	barestem biscuitroot, pestle parsnip	<i>Lomatium nudicaule</i>
	nine-leaf lomatium	<i>Lomatium triternatum</i>
	matrimony vine	<i>Lucium halimifolium</i>
	lupine	<i>Lupinus sp.</i>
	velvet lupine	<i>Lupinus leucophyllus</i>
	bigleaf lupine	<i>Lupinus polyphyllus</i>
	silky lupine	<i>Lupinus sericeus</i>
	sulfur lupine	<i>Lupinus sulphureus</i>
	American bugleweed	<i>Lycopus americanus</i>
	common mallow	<i>Malva neglecta</i>
	clover fern	<i>Marsilea vestita</i>
	pineapple weed	<i>Matricaria matricarioides</i>
	black medic	<i>Medicago lupulina</i>
	alfalfa	<i>Medicago sativa</i>
	white sweet clover	<i>Melilotus alba</i>
	yellow sweet clover	<i>Melilotus officinalis</i>
	wild mint	<i>Mentha arvensis</i>
	bushy blazingstar	<i>Mentzelia dispersa</i>
	blazing star	<i>Mentzelia laevicaulis</i>
	bluebell	<i>Mertensia longifolia</i>
	slender phlox	<i>Microsteris gracilis</i>
	yellow monkey-flower	<i>Mimulus guttatus</i>
	mountain monardella	<i>Monardella odoratissima</i>
	small-flowered forget-me-not	<i>Myosotis laxa</i>



<u>TYPE</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
Forbs, con't.	blue scorpiongrass	<i>Myosotis micrantha</i>
	small-flowered nemophila	<i>Nemophila parviflora</i>
	catnip	<i>Nepeta catarina</i>
	tufted evening-primrose	<i>Oenothera caespitosa</i>
	tansy-leaved evening primrose	<i>Oenothera tanacetifolia</i>
	Adder's tongue	<i>Ophioglossum pulsillum</i> (formerly <i>O. vulgatum</i> )
	brittle prickly-pear cactus	<i>Opuntia fragilis</i>
	plains prickly-pear	<i>Opuntia polyacantha</i>
	Suksdorf's broomrape	<i>Orobanche ludoviciana</i>
	yellow owl-clover	<i>Orthocarpus luteus</i>
	sweetcicely, mountain sweet-root	<i>Osmorhiza chilensis</i>
	crazyweed	<i>Oxytropis</i> sp.
	slender crazyweed, field crazyweed	<i>Oxytropis campestris</i> var. <i>cusickii</i>
	bracted lousewort	<i>Pedicularis bracteosa</i>
	sickletop lousewort	<i>Pedicularis racemosa</i>
	Chilean penstemon	<i>Penstemon pruinosis</i>
	Richardson's penstemon	<i>Penstemon richardsonii</i>
	royal penstemon	<i>Penstemon speciosus</i>
	yampah	<i>Perideridia gairdnerii</i>
	whiteleaf phacelia	<i>Phacelia hastata</i>
	varileaf phacelia	<i>Phacelia heterophylla</i>
	threadleaf phacelia	<i>Phacelia linearis</i>
	silky phacelia	<i>Phacelia sericea</i>
	timothy	<i>Phleum pratense</i>
	tufted phlox	<i>Phlox caespitosa</i>
	spreading phlox	<i>Phlox diffusa</i>
	long-leaf phlox	<i>Phlox longifolia</i>
	bladder pod	<i>Physaria vitulifera</i>
	sleeping popcorn-flower	<i>Plagiobothrys tenellus</i>
	narrowleaf plantain	<i>Plantago lanceolata</i>
	common plantain	<i>Plantago major</i>
	Indian-wheat	<i>Plantago patagonica</i>
	white plectritis	<i>Plectritis macrocera</i>
	knotweed	<i>Polygonum</i> sp
	prostrate knotweed	<i>Polygonum aviculare</i>
	common silverweed	<i>Potentilla anserina</i>
	fan-leaf cinquefoil	<i>Potentilla flabellifolia</i>
	northwest cinquefoil	<i>Potentilla gracilis</i>
	Pacific silverweed	<i>Potentilla pacifica</i>
	Pennsylvania cinquefoil	<i>Potentilla pensylvanica</i>
	common self-heal	<i>Prunella vulgaris</i>
	western brackenfern	<i>Pteridium aquilinum</i>
	shore buttercup	<i>Ranunculus cymbalaria</i>
	sagebrush buttercup	<i>Ranunculus glaberrimus</i>
	western buttercup	<i>Ranunculus occidentalis</i>
	creeping buttercup	<i>Ranunculus repens</i>
	common sheep sorrel	<i>Rumex acetosella</i>

<u>TYPE</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
Forbs, con't.	curly dock	<i>Rumex crispus</i>
	veiny dock	<i>Rumex venosus</i>
	Russian thistle	<i>Salsola kali</i>
	gray ball sage	<i>Salvia dorrii</i>
	peak saxifrage	<i>Saxifraga integrifolia</i> <i>claytoniifolia</i>
	narrow-leaved skullcap	<i>Scutellaria angustifolia</i>
	wormleaf stonecrop	<i>Sedum stenopetalum</i>
	lesser spikemoss	<i>Selaginella densa</i>
	groundsel, butterweed	<i>Senecio sp.</i>
	lambs-tongue groundsel	<i>Senecio integerrimus</i>
	tumble mustard	<i>Sisymbrium altissimum</i>
	Loesel tumble mustard	<i>Sisymbrium loeselii</i>
	blue-eyed grass	<i>Sisyrinchium angustifolium</i>
	bottlebrush	<i>Sitanion hystrix</i> var. <i>hystrix</i>
	bitter nightshade	<i>Solanum dulcamara</i>
	western solomon's seal	<i>Smilacina racemosa</i>
	star-flowered solomon's seal	<i>Smilacina stellata</i>
	climbing nightshade	<i>Solanum dulcamara</i>
	Canada goldenrod	<i>Solidago canadensis</i>
	orange globe mallow	<i>Sphaeralcea munroana</i>
	biennial stanleya	<i>Stanleya confertiflora</i>
	starwort, chickweed	<i>Stellaria media</i>
	narrow-leaved wirelettuce	<i>Stephanomeria tenuifolia</i>
	slender seablite	<i>Suaeda occidentalis</i>
	common dandelion	<i>Taraxacum officinale</i>
	horse-brush	<i>Tetradymia canescens</i>
	yellow salsify	<i>Tragopogon dubius</i>
	red clover	<i>Trifolium pratense</i>
	white clover	<i>Trifolium repens</i>
	wild hyacinth	<i>Tritelia (Brodiaea) douglasii</i>
	stinging nettle	<i>Urtica dioica</i>
	edible valarian	<i>Valeriana edulis</i>
	common mullein	<i>Verbascum thapsus</i>
	American speedwell	<i>Veronica americana</i>
	water speedwell	<i>Veronica anagallis-aquatica</i>
	corn speedwell	<i>Veronica arvensis</i>
	American vetch	<i>Vicia americana</i>
	common vetch	<i>Vicia sativa</i>
	hookedspur violet	<i>Viola adunca adunca</i>
	early blue violet	<i>Viola adunca</i>
	pioneer violet	<i>Viola glabella</i>
	marsh violet	<i>Viola palustris</i>
	annual fescue	<i>Vulpia sp.</i>
	Rocky Mountain woodsia	<i>Woodsia scopulina</i>
	cocklebur	<i>Xanthium strumarium</i>
	meadow death-camas	<i>Zigadenus venenosus</i>
	zizia	<i>Zizia aperta</i>

<u>TYPE</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
<b>Grasses</b>	quack grass	<i>Agropyron repens</i>
	bluebunch wheatgrass	<i>Agropyron spicatum</i>
	redtop	<i>Agrostis alba</i>
	bentgrass	<i>Agrostis spica-venti</i>
	rattlesnake grass	<i>Bromus brizaeformis</i>
	California brome	<i>Bromus carinatus</i> var. <i>carinatus</i>
	meadow brome	<i>Bromus commutatus</i>
	smooth brome	<i>Bromus inermis</i> ( <i>inermis</i> )
	Japanese brome	<i>Bromus japonicus</i>
	cheat grass	<i>Bromus tectorum</i>
	Colombia brome	<i>Bromus vulgaris</i>
	orchard-grass	<i>Dactylis glomerata</i>
	timber oatgrass	<i>Danthonia intermedia</i>
	alkali saltgrass	<i>Distichlis striata</i>
	Great Basin wildrye	<i>Elymus cinereus</i>
	blue wildrye	<i>Elymus glaucus</i>
	reed fescue	<i>Festuca arundinacea</i>
	Idaho fescue	<i>Festuca idahoensis</i>
	western fescue	<i>Festuca occidentalis</i>
	tall mannagrass	<i>Glyceria elata</i>
	fowl mannagrass	<i>Glyceria striata</i>
	foxtail barley	<i>Hordeum jubatum</i>
	prairie Junegrass, Koeler's grass	<i>Koeleria cristata</i>
	Indian ricegrass	<i>Oryzopsis hymenoides</i>
	bulbous bluegrass	<i>Poa bulbosa</i>
	Canada bluegrass	<i>Poa compressa</i>
	Kentucky bluegrass	<i>Poa pratensis</i>
	Sandberg's bluegrass	<i>Poa sandbergii</i>
	pine bluegrass	<i>Poa secunda</i>
	alkali grass	<i>Puccinellia nuttalliana</i>
	green bristletail	<i>Setaria viridis</i>
	sand dropseed	<i>Sporobolus cryptandrus</i>
	needle-and-thread	<i>Stipa comata</i>
	western needlegrass	<i>Stipa occidentalis</i>
	Thurber's needlegrass	<i>Stipa thurberiana</i>
<b>Grass-like</b>	water sedge	<i>Carex aquatilis aquatilis</i>
	slenderbeaked sedge	<i>Carex athrostachya</i>
	Bebb's sedge	<i>Carex bebbi</i>
	Douglas' sedge	<i>Carex douglasii</i>
	thread-leaved sedge	<i>Carex filifolia</i>
	porcupine sedge	<i>Carex hystricina</i>
	inland sedge	<i>Carex interior</i>
	woolly sedge	<i>Carex lanuginosa</i>
	Nebraska sedge	<i>Carex nebrascensis</i>
	Liddon's sedge	<i>Carex petasata</i>
	clustered field sedge	<i>Carex praegracilis</i>

<u>TYPE</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
<b>Grass-like, con't.</b>	knot-sheath sedge	<i>Carex retrorsa</i>
	fox sedge	<i>Carex vulpinoidea</i>
	spike-rush	<i>Eleocharis sp.</i>
	common spike-rush	<i>Eleocharis palustris</i>
	rush	<i>Juncus sp.</i>
	Baltic rush	<i>Juncus balticus</i>
	toad rush	<i>Juncus bufonius</i>
	reed canarygrass	<i>Phalaris arundinacea</i>
	common reed	<i>Phragmites communis</i>
	American bulrush	<i>Scirpus americanus</i>
	panicled bulrush	<i>Scirpus microcarpus</i>
	Olney's bulrush	<i>Scirpus ollneyi</i>
	cat-tail	<i>Typha latifolia</i>
<b>Aquatic</b>	elodea	<i>Elodea sp.</i>
	common duckweed	<i>Lemna minor</i>
	Eurasian water-milfoil	<i>Myriophyllum spicatum</i>
	curled pondweed	<i>Potamogeton crispus</i>
	sago pondweed	<i>Potamogeton pectinatus</i>
	water-cress	<i>Rorippa nasturtium-aquaticum</i>

## BIRDS OF CHIEF JOSEPH DAM

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
common redpoll	<i>Acanthis flammea</i>	common snipe	<i>Capella gallinago</i>
hoary redpoll	<i>Acanthis hornemanni</i>	Cassin's finch	<i>Carpodacus cassinii</i>
Cooper's hawk	<i>Accipiter cooperii</i>	house finch	<i>Carpodacus mexicanus</i>
goshawk	<i>Accipiter gentilis</i>	turkey vulture	<i>Cathartes aura</i>
sharp-shinned hawk	<i>Accipiter striatus</i>	canyon wren	<i>Catherpes mexicanus</i>
spotted sandpiper	<i>Actitis macularia</i>	sage grouse	<i>Centrocercus urophasianus</i>
western grebe	<i>Aechmophorus occidentalis</i>	brown creeper	<i>Certhis familiaris</i>
saw-whet owl	<i>Aegolius acadicus</i>	Vaux's swift	<i>Chaetura vauxi</i>
white-throated swift	<i>Aeronautes saxatalis</i>	semipalmated plover	<i>Charadrius semipalmatus</i>
red-winged blackbird	<i>Agelaius phoeniceus</i>	killdeer	<i>Charadrius vociferus</i>
chukar	<i>Alectoris graeca</i>	snow goose	<i>Chen hyperborea</i>
grasshopper sparrow	<i>Ammodramus savannarum</i>	lark sparrow	<i>Chondestes grammacus</i>
northern pintail	<i>Anas acuta</i>	common nighthawk	<i>Chordeiles minor</i>
green-winged teal	<i>Anas carolinensis</i>	dipper	<i>Cinclus mexicanus</i>
cinnamon teal	<i>Anas cyanoptera</i>	northern harrier	<i>Circus cyaneus</i>
blue-winged teal	<i>Anas discors</i>	northern flicker	<i>Colaptes cafer</i>
mallard	<i>Anas platyrhynchos</i>	rock dove	<i>Columba livia</i>
gadwall	<i>Anas strepera</i>	western wood pewee	<i>Contopus sordidulus</i>
white-fronted goose	<i>Anser albifrons</i>	common crow	<i>Corvus brachyrhynchos</i>
water pipit	<i>Anthus spinoletta</i>	common raven	<i>Corvus corax</i>
golden eagle	<i>Aquila chrysaetos</i>	sanderling	<i>Crocethia alba</i>
great blue heron	<i>Ardea herodias</i>	Steller's jay	<i>Cyanocitta stelleri</i>
short-eared owl	<i>Asio flammeus</i>	blue grouse	<i>Dendragapus obscurus</i>
long-eared owl	<i>Asio otus</i>	downy woodpecker	<i>Dendrocopos pubescens</i>
Lewis'woodpecker	<i>Asyndesmus lewis</i>	hairy woodpecker	<i>Dendrocopos villosus</i>
lesser scaup	<i>Aythya affinis</i>	yellow-rumped warbler	<i>Dendroica coronata</i>
redhead	<i>Aythya americana</i>	yellow warbler	<i>Dendroica petechia</i>
ring-necked duck	<i>Aythya collaris</i>	Townsend's warbler	<i>Dendroica townsendii</i>
greater scaup	<i>Aythya marila</i>		
canvasback	<i>Aythya valisineria</i>		
cedar waxwing	<i>Bombycilla cedrorum</i>	willow flycatcher	<i>Empidonax traillii</i>
bohemian waxwing	<i>Bombycilla garrula</i>	dusky flycatcher	<i>Empidonax wrightii</i>
ruffed grouse	<i>Bonasa umbellus</i>	Baird's sandpiper	<i>Erolia bairdii</i>
Canada goose	<i>Branta canadensis</i>	pectoral sandpiper	<i>Erolia melanotos</i>
great horned owl	<i>Bubo virginianus</i>	least sandpiper	<i>Erolia minutilla</i>
bufflehead	<i>Bucephala albeola</i>	Brewer's blackbird	<i>Euphagus cyanocephalus</i>
common goldeneye	<i>Bucephala clangula</i>		
barrow's goldeneye	<i>Bucephala islandica</i>	merlin	<i>Falco columbarius</i>
red-tailed hawk	<i>Buteo jamaicensis</i>	prairie falcon	<i>Falco mexicanus</i>
rough-legged hawk	<i>Buteo lagopus</i>	peregrine falcon	<i>Falco peregrinus</i>
ferruginous hawk	<i>Buteo regalis</i>	American kestrel	<i>Falco sparverius</i>
Swainson's hawk	<i>Buteo swainsoni</i>	American coot	<i>Fulica americana</i>

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
Pacific loon	<i>Gavia arctica</i>
common loon	<i>Gavia immer</i>
red-throated loon	<i>Gavia stellata</i>
common yellowthroat	<i>Geothlypis trichas</i>
sandhill crane	<i>Grus canadensis</i>
bald eagle	<i>Haliaeetus leucocephalus</i>
evening grosbeak	<i>Hesperiphona verspertina</i>
barn swallow	<i>Hirundo rustica</i>
yellow-breasted chat	<i>Icteria virens</i>
northern oriole	<i>Icterus galbula</i>
tree swallow	<i>Iridoprocne bicolor</i>
varied thrush	<i>Ixoreus naevius</i>
northern shrike	<i>Lanius excubitor</i>
loggerhead shrike	<i>Lanius ludovicianus</i>
herring gull	<i>Larus argentatus</i>
California gull	<i>Larus californicus</i>
ring-billed gull	<i>Larus delawarensis</i>
Bonaparte's gull	<i>Larus philadelphia</i>
hooded merganser	<i>Lophodytes cucullatus</i>
California quail	<i>Lophortyx californicus</i>
red crossbill	<i>Loxia curvirostra</i>
American wigeon	<i>Mareca americana</i>
belted kingfisher	<i>Megasceryle alcyon</i>
surf scoter	<i>Melanitta perspicillata</i>
song sparrow	<i>Melospiza melodia</i>
common merganser	<i>Mergus merganser</i>
red-breasted merganser	<i>Mergus serrator</i>
brown-headed cowbird	<i>Molothrus ater</i>
Townsend's solitaire	<i>Myadestes townsendi</i>
Clark's nutcracker	<i>Nucifraga columbiana</i>
long-billed curlew	<i>Numenius americanus</i>
black-crowned night heron	<i>Nycticorax nycticorax</i>
tundra swan	<i>Olor columbinus</i>
MacGillivray's warbler	<i>Oporornis tolmiei</i>
sage thrasher	<i>Oreoscoptes montanus</i>
ruddy duck	<i>Oxyura jamaicensis</i>
osprey	<i>Pandion haliaetus</i>
house sparrow	<i>Passer domesticus</i>
savannah sparrow	<i>Passerculus sandwichensis</i>
lazuli bunting	<i>Passerina amoena</i>
fox sparrow	<i>Passerella iliaca</i>

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
sharp-tailed grouse	<i>Pedioecetes phasianellus</i>
white pelican	<i>Pelecanus erythrorhynchos</i>
rufous-sided towhee	<i>Pipilo erythrophthalmus</i>
gray partridge	<i>Perdix perdix</i>
cliff swallow	<i>Petrochelidon pyrrhonota</i>
poor-will	<i>Phalaenoptilus nuttallii</i>
ring-necked pheasant	<i>Phasianus colchicus</i>
black-headed grosbeak	<i>Pheucticus melanocephalus</i>
black-billed magpie	<i>Pica pica</i>
western tanager	<i>Piranga ludoviciana</i>
horned grebe	<i>Podiceps auritus</i>
eared grebe	<i>Podiceps caspicus</i>
red-necked grebe	<i>Podiceps grisegena</i>
pied-billed grebe	<i>Podilymbus podiceps</i>
black-capped chickadee	<i>Poecile atricapillus</i> (formerly <i>Parus a</i> ).
mountain chickadee	<i>Poecile gambeli</i> (formerly <i>Parus g</i> .)
Vesper sparrow	<i>Pooecetes gramineus</i>
sora	<i>Porzana carolina</i>
ruby-crowned kinglet	<i>Regulus calendula</i>
golden-crowned kinglet	<i>Regulus satrapa</i>
bank swallow	<i>Riparia riparia</i>
rock wren	<i>Salpinctes obsoletus</i>
Say's phoebe	<i>Sayornis saya</i>
rufous hummingbird	<i>Selasphorus rufus</i>
mountain bluebird	<i>Sialia currucoides</i>
western bluebird	<i>Sialia mexicana</i>
red-breasted nuthatch	<i>Sitta canadensis</i>
northern shoveler	<i>Spatula clypeata</i>
burrowing owl	<i>Speotyto cunicularia</i>
pine siskin	<i>Spinus pinus</i>
American goldfinch	<i>Spinus tristis</i>
tree sparrow	<i>Spizella arborea</i>
Brewer's sparrow	<i>Spizella breweri</i>
chipping sparrow	<i>Spizella passerina</i>
rough-winged swallow	<i>Stelgidopteryx ruficollis</i>
Calliope hummingbird	<i>Stellula calliope</i>
Forster's tern	<i>Sterna forsteri</i>
western meadowlark	<i>Sturnella neglecta</i>
starling	<i>Sturnus vulgaris</i>
hawk owl	<i>Surnia ulala</i>
ancient murrelet	<i>Synthliburamphus antiquus</i>

<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>
violet-green swallow	<i>Tachycineta thalassina</i>	orange-crowned warbler	<i>Vermivora celata</i>
lesser yellow-legs	<i>Totanus flavipes</i>	Nashville warbler	<i>Vermivora ruficapilla</i>
greater yellow-legs	<i>Totanus melanoleucus</i>	warbling vireo	<i>Vireo gilvus</i>
solitary sandpiper	<i>Tringa solitaria</i>	red-eyed vireo	<i>Vireo olivaceus</i>
house wren	<i>Troglodytes aedon</i>	Cassin's vireo	<i>Vireo cassinii</i> (formerly <i>V. solitarius</i> )
winter wren	<i>Troglodytes troglodytes</i>		
American robin	<i>Turdus migratorius</i>	Wilson's warbler	<i>Wilsonia pusilla</i>
eastern kingbird	<i>Tyrannus tyrannus</i>		
western kingbird	<i>Tyrannus verticalis</i>	yellow-headed blackbird	<i>Xanthocephalus</i> <i>xanthocephalus</i>
barn owl	<i>Tyto alba</i>		
		mourning dove	<i>Zenaidura macroura</i>
		white-crowned sparrow	<i>Zonotrichia leucophrys</i>



## MAMMALS, REPTILES, AMPHIBIANS OF CHIEF JOSEPH DAM

<b>Mammals</b>	<b><u>COMMON NAME</u></b>	<b><u>SCIENTIFIC NAME</u></b>
	moose	<i>Alces alces</i>
	coyote	<i>Canis latrans</i>
	beaver	<i>Castor canadensis</i>
	elk	<i>Cervus canadensis</i>
	big brown bat	<i>Eptesicus fuscus</i>
	porcupine	<i>Erethizon dorsatum</i>
	yellow pine chipmunk	<i>Eutamias amoenus</i>
	least chipmunk	<i>Eutamias minimus</i>
	sagebrush vole	<i>Lagurus curtatus</i>
	black-tailed hare	<i>Lepus californicus</i>
	white-tailed hare	<i>Lepus townsendi</i>
	river otter	<i>Lutra canadensis</i>
	bobcat	<i>Lynx rufus</i>
	yellow-bellied marmot	<i>Marmota flaviventris</i>
	striped skunk	<i>Mephitis mephitis</i>
	mountain vole	<i>Microtus montanus</i>
	house mouse	<i>Mus musculus</i>
	mink	<i>Mustela vison</i>
	western small-footed bat	<i>Myotis ciliolabrum</i>
	little brown bat	<i>Myotis lucifugus</i>
	Yuma bat	<i>Myotis yumanensis</i>
	bushy-tailed wood rat	<i>Neotoma cinerea</i>
	mule deer	<i>Odocoileus hemionus</i>
	white-tailed deer	<i>Odocoileus virginianus</i>
	muskrat	<i>Ondatra zibethica</i>
	Great Basin pocket mouse	<i>Perognathus parvus</i>
	deer mouse	<i>Peromyscus maniculatus</i>
	western pipistrel	<i>Pipistrellus hesperus</i>
	raccoon	<i>Procyon lotor</i>
	western harvest mouse	<i>Reithrodontomys megalotis</i>
	cougar	<i>Selis concolor</i>
	Nuttall's cottontail	<i>Sylvilagus nuttallii</i>
	badger	<i>Taxidea taxus</i>
	northern pocket gopher	<i>Thomomys talpoides</i>
	black bear	<i>Ursus americanus</i>
	Pacific jumping mouse	<i>Zapus trinotatus</i>
<b>Reptiles and Amphibians</b>	painted turtle	<i>Chrysemys picta</i>
	western yellow-bellied racer	<i>Coluber constrictor mormon</i>
	western rattlesnake	<i>Crotalus viridis</i>
	western skink	<i>Eumeces skiltonianus</i>
	Pacific treefrog	<i>Hyla regilla</i>
	short-horned lizard	<i>Phrynosoma douglassi</i>
	Pacific gopher snake	<i>Pituophis melanoleucus catenifer</i>

## FISH SPECIES OF CHIEF JOSEPH DAM

RWL = Rufus Woods Lake

M/U CR = Mid- & Upper Columbia River

\*Native to the Columbia basin, but not necessarily to Rufus Woods Lake or mid-Columbia River.

<u>FAMILY</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>RWL</u>	<u>M/U CR</u>
<b>Acipenseridae— sturgeon</b>	white sturgeon*	<i>Acipenser transmontanus</i>	X	X
<b>Catostomidae— sucker</b>	sucker spp.	<i>Catostomus spp.</i>		X
	longnose sucker*	<i>Catostomus catostomus</i>	X	X
	bridgelip sucker*	<i>Catostomus columbianus</i>	X	X
	largescale sucker*	<i>Catostomus macrocheilus</i>	X	X
<b>Centrarchidae— bass and sunfish</b>	pumpkinseed	<i>Lepomis gibbosus</i>		X
	bluegill	<i>Lepomis macrochirus</i>		X
	largemouth bass	<i>Micropterus salmoides</i>		X
	smallmouth bass	<i>Micropterus dolomeui</i>	X	X
	black crappie	<i>Pomoxis nigromaculatus</i>	X	X
<b>Cottidae—sculpin</b>	sculpin spp.*	<i>Cottus spp.</i>		X
	prickly sculpin*	<i>Cottus asper</i>	X	X
	Paiute sculpin	<i>Cottus beldingi</i>		X
	torrent sculpin*	<i>Cottus rhotheus</i>	X	
<b>Cyprinidae— minnow</b>	chiselmouth*	<i>Arcocheilus aleutaceus</i>	X	X
	carp	<i>Cyprinus carpio</i>	X	X
	northern pikeminnow* (formerly northern squawfish)	<i>Ptychocheilus oregonensis</i>	X	X
	peamouth chub*	<i>Mylocheilus caurinus</i>	X	X
	speckled dace*	<i>Rhinichthys osculus</i>	X	
	redside shiner*	<i>Richardsonius balteatus</i>	X	X
<b>Esocidae—pike</b>	northern pike (unconfirmed)	<i>Esox lucius</i>	X	
<b>Gadidae—cod</b>	burbot*	<i>Lota lota</i>	X	X
<b>Gasterosteidae— stickleback</b>	threespine stickleback*	<i>Gasterosteus aculeatus</i>		X
<b>Ictaluridae— catfish</b>	black bullhead	<i>Ameiurus melas</i>		X
	yellow bullhead	<i>Ameiurus natalis</i>		X
	brown bullhead	<i>Ameiurus nebulosus</i>	X	X
<b>Percidae—perch</b>	yellow perch	<i>Perca flavescens</i>	X	X
	walleye	<i>Stizostedion vitreum</i>	X	X
<b>Percopsidae— troutperch</b>	sandroller	<i>Percopsis transmontana</i>		X
<b>Petromyzontidae— lamprey</b>	Pacific lamprey*	<i>Entosphenus tridentatus</i>		X

RWL = Rufus Woods Lake

M/U CR = Mid- & Upper Columbia River

\*Native to the Columbia basin, but not necessarily to Rufus Woods Lake or mid-Columbia River.

<u>FAMILY</u>	<u>COMMON NAME</u>	<u>SCIENTIFIC NAME</u>	<u>RWL</u>	<u>M/U CR</u>
<b>Salmonidae— whitefish, trout, salmon, char</b>	mountain whitefish	<i>Prosopium williamsoni</i>	X	X
	lake whitefish*	<i>Coregonus clupeaformis</i>	X	X
	kokanee*	<i>Oncorhynchus nerka</i>	X	X
	sockeye salmon*	<i>Oncorhynchus nerka</i>		X
	cutthroat trout*	<i>Oncorhynchus clarki</i>	X	X
	steelhead*	<i>Oncorhynchus mykiss</i>		X
	rainbow trout*	<i>Oncorhynchus mykiss</i>	X	X
	chinook salmon*	<i>Oncorhynchus tshawytscha</i>		X
	coho salmon	<i>Oncorhynchus kisutch</i>	X	X
	brown trout	<i>Salmo trutta</i>	X	X
	bull trout*	<i>Salvelinus confluentus</i>	X	X
	brook trout	<i>Salvelinus fontinalis</i>	X	X

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**APPENDIX E**

**MASTER PLAN  
DISTRIBUTION LIST**

### Distribution List For September 2001 Draft

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**APPENDIX F  
COMMENTS:**

**PUBLIC MEETINGS**

**AGENCY AND  
PUBLIC COMMENTS**



## Chief Joseph Dam Master Plan Public Meeting Summary

### Chief Joseph Dam, February 2, 1999

regular text = participant questions and comments

***bold-italics = U.S. Army Corps of Engineers' staff responses and comments (unless otherwise noted)***

#### Corps Participants:

Chief Joseph Dam staff: Jim Habermehl (former chief—Recreation and Natural Resource Management Section), Bob Fischer (biologist), Sharon Mahsman (former park ranger), Mark Harris (park ranger).

Seattle District staff: Terri Taylor (master plan project manager; structural architect), Bonnie Ecker (outdoor recreation planner).

#### **First meeting 2:30-4:30 PM (scheduled for 3-5 PM) Attendance: 9**

1. Board of Directors for the Golf Course Association (GCA—the association leases the golf course from the state park, and the state park leases the land from the U.S. Army Corps of Engineers): What is the length of the lease between the state park and the Corps?

***25 years.***

The leasehold interest is \$4,200 per year on top of personal property taxes. There is only a marginal profit being made due to the on-off seasonal business and the cost to install irrigation (\$96,000). Can the leasehold interest be waived?

***The state park doesn't want to give up the lease. The Corps wants to retain the lease with the golf course and park collectively.***

***Follow-up Corps response: Golf courses on land leased directly from the Corps must have a local sponsor or partner (such as the city) and provide documentation and assurance of on-going funding for operation and maintenance not dependent on revenues generated.***

The golf course wants a percentage of the total gross on top of the leasehold interest. On the original lease there was no date on it. The attorney says the date is indefinite and extends to the 31st of 1999.

***The Corps doesn't have a copy of the sublease agreement between the state park and the golf association.***

2. City of Bridgeport planner: Regarding sewage treatment if the Corps hooks up to the city water system.

***If the city considers the hook-up, the Corps will do a feasibility study, but the mayor needs to respond first.***

Does the Growth Management Act allow for expansion to the Corps?

***The Corps may pursue expansion if the city is willing.***

What about recreation facility expansion?

***On the right bank, the orientation area will include upgrading the current vault toilet to a flush toilet by late summer 1999/early fall. A labyrinth (150 ft long) should be started in 1999; a maze (225 ft long) will start later. The goal is to increase visitation which will increase interpretation of hydropower and the importance of salmon to Native Americans.***

*Volunteer labor and some public funds will finance the projects (the Port of Douglas County is providing partial funding). The labyrinth will cost about \$15K for labor and materials, unknown on the maze. The projects are being coordinated with the Confederated Tribes of the Colville Reservation (CCT).*

*The labyrinth will be surrounded by a strip of grass and a pond. A small waterfall will circulate the water. The diameter of the labyrinth itself is 60 feet. Crushed gravel 18 inches wide will form the pathway with grass separating the paths that wheelchairs can ride on. Other labyrinths in Washington are located at the Duwamish Park in Tukwila, in Bellevue, and on Camano Island. They're very popular. The maze will be constructed using native grasses. This is what we are leaning toward. Nothing is definite. We are working on the labyrinth at this time.*

*Follow-up Corps response: Since this public meeting, the maze and labyrinth have been completed. Native grasses have been planted in the labyrinth and we will monitor the growth rate during summer 2001.*

3. GCA: What about the trail versus the golf course; its location?

*The trail will be along the north side of the road, past the golf course, then cross over the road back to the south side of the road. Eventually we would like to work with the WSDOT to continue the trail across the bridge. This may be difficult to achieve because the bridge now is very hazardous for pedestrians and bicyclists so needs to be addressed.*

Is this a footpath?

*Either a footpath or a bike path, maybe both depending on funding and site conditions.*

Bicycles might be safer being on the trail due to speeding cars, including motorhomes going too fast into curves and then seeing a bicyclist on the roadway.

*Good point to consider. The trail from the golf course to the river may be constructed this year.*

4. GCA: Can the cattle guard by the golf course be removed? Who installed it?

*The Corps put a guard in when the fence was installed around the park because the surrounding property was range land. It's been removed.*

It's the other guard, the one by the main gate; a bicyclist fell when crossing it.

*The Corps will need to determine who owns the guard itself and see if it's removable; they will talk to state park staff to see about its removal.*

*Follow-up Corps response: The Corps removed the cattle guard.*

It would be a good idea to replace it with a speed bump since the cattle guard has acted as one because cars slow down to cross it.

5. Private landowner: How would you control fires along the river upstream if you do any development?

*There are boat tie-ups proposed for Rocky Flats. The Corps already allows fires there, but fires could become a problem if the area increases in usage.*

What other facilities are being considered, boat camping? I'm concerned about the extent of development.

*Some campsites, grills, tables were mentioned in the old [1988] draft master plan and a vault toilet. In the new plan we are considering plans for potential development. There is pressure for facilities on the river. We won't ever develop intensively, but maybe a couple of tent sites, chemical toilet, grills.*

*Follow-up Corps response: We are currently in consultation with the CCT, BLM, and state authorities concerning a plan to install a composting toilet to address the sanitation hazard, and to install three fire rings to address the fire hazard at Rocky Flats. Three picnic tables may be placed on the site in conjunction with the fire rings to control camp use and to protect native vegetation.*

I run cattle on BLM lands as well as private lands. More areas are being fenced off. The last fencing that was installed limits livestock getting to the water. The fence was put in to retain the foliage for the birds and for habitat. If camping is allowed, there's still going to be a loss of shoreline to the birds as well as to the livestock. The upstream area is a pristine part of the river. I don't want to see any development. I realize this is a selfish point of view because of the potential impact to my property. I don't mind seeing people using the area, I just don't want development which leads to trouble up to my place, like vandalism, target shooting at my livestock, some fire potential.

*The back cove is the attraction as it's a protected area. There is already some physical separation between the bird shoreline and the people area.*

*If the area is developed and boundaries and facilities defined, thus creating a controlled area, would this make it better? For a primitive camping area at Libby Dam, the site was upgraded to better define camping sites, etc., because uncontrolled camping was causing resource damage. Sometimes, if an area is going to be used no matter what, developing it to some degree can provide resource protection.*

Even if it's a defined area, there's more in and out boats. When the boat stops, people relieve themselves as well as their garbage, and it spreads, including the beer bottles.

6. In regards to fire, it won't burn anything that couldn't be burned anyway, but if it got out of control when livestock are in the area, we wouldn't be able to get to them in time. I think putting a restroom in will only bring more and more people and create more problems.

7. Why was this area (Rocky Flats) originally selected?

*The site is protected from the wind so provides a good boat camping site.*

It's really the only area along the river where a boat can stop [hinting that there should be more places to pull a boat into].

*We don't have the land base to do much recreational development like other agencies do.*

8. I prefer primitive areas, that's a plus on the river, but there needs to be garbage receptacles. The less development the better.

*Large groups like the Boy Scouts like to go camping and there are not many areas to camp. Across from the state park is Corps fee land with only an 18- to 20-foot wide beach. One problem is that even though the area is right across from the state park, boaters don't want to go into the park and walk all the way to the restrooms—the Corps' beach site is easier to access from the water. The state park uses the area and allows waterskiing. The problem would be trash, but it could become "the" developed area instead. Brandt's Landing is another site. People want sand, but there's only rock there.*

*Can we add trash receptacles and signage? Receptacles and chemical toilets (1-2) could be emptied weekly or monthly at sandy areas, but it's easier for folks to relieve themselves on-site then to walk to a facility. The problem would be how to keep the facilities clean and pumped out. It would force a road to be put in to get a pumper truck in and creates more maintenance. There are floating toilets at on Grand Coulee Dam's Lake Roosevelt. We can check with Idaho State Parks on how they pump out vault toilets at their backriver camping sites, and with the National Park Service about how their floating toilets are maintained.*

*Follow-up Corps response: Trash receptacles will not be placed in primitive areas because we do not have the staff or funds to support collecting the refuse. Upstream primitive areas will remain as Pack In - Pack Out for all garbage. Refer to question 5 above for information on development at Rocky Flats.*

9. WDFW: Landowner concerns with hunters on property. Can signs for private property, or a sign at the boat launch about asking permission to enter private lands, be erected since the Corps has a lease for wildlife mitigation?

*We don't know about signage; we'd have to check with landowners.*

*Follow-up Corps response: Adding a notice to the boat ramp bulletin boards is a viable option. However, approval or denial for public access still rests with the landowner.*

The problem is hunters think the land is public rather than private. There needs to be communication with the public. The Corps has a problem with 45 miles along the river with half being public and half being private lands. Private landowners want the Corps to pay for signage. What about a Corps brochure?

*We tried to develop one but due to the large area that is covered by the sites, the scale on the map becomes a problem. Individually, if we get a request, I will send out a map showing the 16 wildlife sites. Unless it's signed on the shoreline, it's hard to find the sites. We could use a BLM Surface Ownership map and give it to the public. Irrigated mitigation sites look like public land and are the primary problem. In particular, two irrigated mitigation sites on the CCT side are the biggest problem. Some of the sites have multiple owners that make it even more difficult to sign them. For example, one of the CCT sites is 2/3 tribal and 1/3 private land so you need a tribal permit to hunt on part of the land and the owners permission on the private property portion—this is very confusing to sign. There's not a problem by Brandt's Landing. The Corps doesn't control access to the mitigation sites, we only have permission to create and manage the land for wildlife mitigation. Some landowners want the Corps to install the signs, even though this is not officially our responsibility.*

Can you work with the landowners and Tribes for signing? The WDFW is willing to work with the Corps.

*Communication is everyone's responsibility. The Corps could probably work more closely with landowners to sign their property. Back-to-back signs seem to work: "Public land beyond this sign" on one side, "Private land beyond this sign" on the backside. No vandalism so far.*

*Follow-up Corps response: Currently, Chief Joseph Dam resource staff makes every effort to verbally let people know about property ownership concerns on the lake. No signs are placed yet due to concerns about whether signage is the Corps' responsibility or the landowner's. The Corps will pursue the feasibility of the following solutions.*

- (a) Erecting signs along the shoreline—check cost feasibility and desire to install signs on Corps property. Consider erecting a minimal number of back-to-back signs to retain the natural aesthetics of the area.*
- (b) Placing signs at boat launch(es).*
- (c) Preparing and distributing brochures.*
- (d) Pursuing multi-agency cooperation, including WDFW, CCT, Douglas County sheriff, Okanogan County sheriff, and landowners.*

10. Private landowner: I would disagree that signing works; at one place the property is signed but the signs are not working; there are lots of problems with trespassers.

*WDFW: We know signs will not completely solve the problem but it will help. Those individuals in the public who are disrespectful are that way regardless of signage, period. There is NO absolute solution, we can only guide where the public places are located. Enforcement and citations will always be a fact of life.*

11. Private landowner (from second meeting; put here for continuity): Has there been any encouragement by the Corps for more hunting or fishing in the area? Most people ask permission to use private land (99%), but those with maps think they're on public lands. They can't tell in real life versus what's on the map. Just seems to be more and more people in the area.

*The Corps has no authority to promote hunting. We only have authority to mitigate wildlife losses through habitat development. The WDFW and the NMFS have the authority to invite the public in.*

*Follow-up Corps response: Hunting is an important and authorized recreational activity for which the Corps manages and enhances its property in appropriate areas. However, the Corps does not have the land base on Rufus Woods Lake to develop into a hunting area.*

*Regarding fishing opportunities, the Corps vigorously promotes fishing through partnerships with the Recreational Fishing and Boating Foundation, sponsoring special events for National Fishing Week—such as fishing derbies and Learn to Fish programs—and advertising through multiple media sources (Internet, radio, TV, brochures, newspapers). The Corps also licenses commercial fishing guide services on Rufus Woods Lake.*

12. Bridgeport planner: Bridgeport's economy is not doing well. We think that any means of bringing more people into Bridgeport is a good idea, especially development on the Douglas County side. For example, what about a trail system along the south bank of the river? Why is the north bank (right) being developed instead of the south bank (left bank)?

*There are deer and osprey on the south bank resulting in it being designated a wildlife area. Currently, it's not an easy area to develop due to Corps facilities being present, and the embankment would take more to develop. It also doesn't lead to the visitor center easily. Our primary goal is to have visitors get to the visitor center so we can interpret the dam and hydropower, etc. It's about two miles from the orientation area to the visitor center on the north bank. There is a short trail at the debris area.*

Bridgeport needs to be a place for tourists to stop.

*We've talked to Steve Jenkins (the mayor) on several occasions about this. Our hope*

*is that the new development proposed for the right bank orientation area (labyrinth and maze) will be just as effective at bringing more visitors to the area as providing more development on the left bank. The (right) north bank lends itself to advertising better due to less signage conflicts. By putting the labyrinth on the north bank it's a self-made advertisement for tourists to stop.*

To draw in further into Bridgeport, past the Quick-E Mart and into the city is a city problem. The city isn't set up for tourism.

*The Quick-E Mart will probably get increased business no matter which side of the river is developed. Bicyclists pass through the area during the summer, but it's a safety problem for them to cross the bridge. The Centennial Trail is still being discussed and it could tie into plans for a Corps trail to Bridgeport State Park. Anything we can do to increase safety on the bridge is a good idea.*

*Follow-up Corps response: Since this public meeting, the Corps has completed the maze and labyrinth on the north shore, replaced the vault toilet with a waterborne restroom, and completed another mile of walking/hiking trail in this area. The south viewpoint shelter, the walkways, and the overall area have been remodeled with landscaping, a vault toilet, and possibly a playground added in 2001. A large picnic shelter and the Commons Building on the south shore have been constructed and are available for public and private group usage through a special use permit. These efforts will help to draw more public into the area to hear the story of the dam.*

13. Land Use Administrator for the Confederated Tribes of the Colville Reservation: We would like a map showing fee versus tribal land ownership. We would like to see existing land use and who owns it, in the direct dam area primarily and any sites directly affecting the Tribes.

*We own very little fee land and very little would directly affect the CCT; for example, the land in the vicinity of the dam and at Nespelem Bar. We can provide copies of the digital ortho-photo maps showing the fee land area around the dam and the site at Nespelem. (Note: Maps were provided by Corps to the CCT in Feb. 1999.)*

*Homes can't be constructed along the river's edge due to safety and liability reasons. However, some structures that are not for habitation can be constructed but the party would need to get permission from the Corps. Easement widths vary and do not follow a straight elevation line as at Lake Roosevelt, but can be 200 feet or one half mile wide. The easement lines are based on potential slide areas but followed existing property lines (section lines) in many instances because it made the real estate actions more efficient.*

14. Bridgeport planner: What about the fish net pens? I see camp tables there.

*CCT: Our Tribal Parks and Recreation Program has this area.*

15. Private landowner for another landowner: My friend fishes both from a boat and from shore. He doesn't see enforcement on the river for boat requirements (PFDs, extinguishers, et al). He sees the Corps boats but knows they're for maintenance, not enforcement. Where is the presence on the river? Use of the area is increasing and with this increased use, vandalism, trespassing, and hunting and fishing without licenses has increased.

*The Douglas County sheriff has a new boat that should help. Okanogan County does some runs a few times a year. There's not enough river use to warrant frequent patrols.*

*Follow-up Corps response: The Corps does not have authority to enforce state laws, such as for fishing licenses. However, as of June 2000, U.S. Army Corps of Engineers park rangers have regularly patrolled the lake throughout the summer recreation season*

*to provide for visitor assistance, enforce C.F.R. Title 36 regulations, conduct boat safety inspections, and distribute water safety literature.*

What about control of land use?

*The Corps has limited on-river authority.*

*Follow-up Corps response: The Corps enforces C.F.R. Title 36 regulations, Chapter 327, on Corps lands and on the waters of Rufus Woods Lake. The Corps also monitors flowage easement lands for compliance with easement restrictions. The majority of the shoreline is in private ownership. Because of this, the Corps only enforces our easement conditions on those lands.*

What can the Corps do to get more enforcement presence, by any agency?

*The Douglas County sheriff has direct authority. We can talk with both counties and the sheriff about this issue.*

*Follow-up Corps response: Chief Joseph Dam staff talked with Douglas County at length during spring 1999 about an increased presence on the lake. Douglas County now has a patrol boat and wave runner stationed in Bridgeport and the local deputy is now a "boat patrol officer." As of June 2000, Corps rangers provide scheduled boat patrols on weekends throughout the recreation season and intermittent patrols during the week. Patrols are primarily to provide visitor assistance and courtesy safety inspections. The Colville Tribal Law Enforcement Division has been asked to increase their presence as well.*

#### **Second meeting 6:00 - 8:30 PM (scheduled 6-8 PM) Attendance: 7**

16. Private landowner: Can the curve in the road between the project office and Hwy 17 be developed?

*The Corps can cost-share for new recreation development, but we don't have the budget for construction and maintenance. The area should have been developed 20 years ago when funds were available. The political conditions for more elaborate development plans proposed 20-30 years ago have changed. There is no Corps support for this now.*

The area was rock, sagebrush and dirt, and that's why it wasn't developed. I would like to see something greener and a pretty place in the area to stop and rest. Like what was done at Rocky Reach Dam—create an attractive, lush green area to attract attention.

*The right bank orientation area is the current focus of improvements. Just adding green grass might be okay, but structures and facilities in a new area wouldn't be approved.*

Just some trees, flowers, and a grass area. Construction of the dam promised irrigation AND hydropower, and nothing was developed with irrigation.

*Former project engineer Dick Means' only focus was on hydropower. It sounds like you want a grassy pullout area to overlook the project. The problem with greening up the lower flat is the conflict between tourist and project traffic, and between traffic and the wildlife (deer) that use the area. The focus remains on the orientation area instead.*

*Follow-up Corps response: The south viewpoint has been developed as an attractive pullout location. A vault toilet and children's play area was installed in summer 2001. A sun shelter, picnic tables, and viewing binoculars are currently in place.*



17. Any word about a fish ladder at Chief Joseph Dam and Grand Coulee Dam?

*The Confederated Tribes of the Colville Reservation want a fish ladder at Chief Joseph Dam first. They realize that Nespelem Creek is the only historical spawning creek and they want to pursue that first, then they will pursue fish ladders at Grand Coulee Dam. Under normal conditions, the cost of a fish ladder at Chief Joseph Dam would be considered too prohibitive and it is unlikely it would be built. However, with the current focus on the Endangered Species Act, large sums of money are being spent so we don't know about the future. No one thought breaching the dams on the Snake would ever be considered either so that shows how much things have changed.*

18. What about fish ladders on the reservation side?

*Fish did go past Grand Coulee Dam, but can't now. The Corps originally had plans for a ladder at Chief Joseph Dam. Congress didn't want to put the money into it because the Washington Game Commission stated Grand Coulee Dam blocked all runs past Chief Joseph Dam.*

*Follow-up Corps response: More recently, the Corps and the Colville Confederated Tribes have been working cooperatively on the issue of fish passage. At the Colvilles' request, the Corps has completed a draft report on possible fish passage options that is being reviewed internally and by the Colvilles as of June 2001. The Colvilles have contracted out a report on available salmon and steelhead habitat between Chief Joseph and Grand Coulee dams, and a draft of that report is due for internal review in June. The Colvilles are pursuing discussions with regional fish managers and policymakers. Fish passage concepts examined include ladders, a fish lock/lift, a natural bypass channel for upstream passage, and surface collector, bypasses, collection/transport, and spillway and turbine passage. This is a preliminary evaluation only; however, no policy decision has been made whether to implement passage at all yet, and the methods would need to be further weighed and discussed. The Colvilles are ultimately interested in passage above Grand Coulee Dam as well, but again, this is a regional policy matter and it would present technical challenges even more difficult than passage at Chief Joseph Dam.*

19. Private landowner: The fish net pens...there are 20-30 boats hanging out below the pens in the winter fishing due to releases. Hunters at the bird sanctuary are increasing and that's on CCT lands. Guides are being paid to take in fowl hunters. Boats are being used to flush out the birds towards the hunters. There's bear in the area, too. Bears never historically were in the area. In the 1970's more bear were seen in the area. No one hunts them now and the population is increasing. The deer population is hunted pretty intensively so you don't see them very much anymore. The problem is the numbers of people are increasing and they're launching their boats from private property. I don't mind, but one percent of them should be choked. Elmer City and the dam are the only other launch efforts. The Tribes put in trash cans and patrol the area. There's a problem with drivers not staying on the road and driving across the fields. They bring in "puncture vine," an exotic weed on their tires and it's spreading rapidly. Exotics are really becoming a problem and increased users will make the problem worse. Also, boaters are looking for places to pull into and camp where I am. There are lots of boaters looking for gas pumps.

*The Corps has only three small parcels of fee owed land on the lake. All the other lands we administer are not in fee title but are in flowage easement lands. Most of our fee land is around the dam. The dam, Brandt's Landing, and Nespelem Creek (Nespelem Creek will not be developed due to resource protection) are the only deeded land that can be developed.*

Campers are illegally camping on my property as well as across the lake. I even found a camper in a high fire area (on my haystack!). There's going to be a trash and fire concern, and a sanitation problem. Sanitation is the largest problem. Roosevelt Lake (National Park Service) has floating toilets.

*We'll see what we can find out.*

***Follow-up Corps response: The Corps is attempting to address the fire and sanitation problem at Rocky Flats. Park rangers promote responsible use and environmental stewardship through interpretive programs and informal contacts. We will continue to work with the CCT to address this issue.***

20. Private landowner: What about recreation development on the river?

***There's no land base, but if there was, today, Congress mandates cost-share agreements for development. This is a change from in the past; there is not much support for increased recreation development from the Corps.***

***Follow-up Corps response: As stated in Section 12.2.1, Future Design, the Corps' current policy governing new recreation development stipulates that development to meet increased demands for recreation facilities should be pursued with local funds, through lease agreements with local government units, or other means. In other words, the Corps can add a new recreation area only through a 50-50 cost-sharing agreement with a non-federal entity that will pay for half of the construction costs and then agree to operate and maintain the facility.***

If the use increases like it has over the last two years, there'll be a problem in the next one to two years. Fishermen are coming in from Texas and California. The Internet lists Rufus Woods Lake as a hot fishing place.

***The Corps should address the situation since we created the reservoir. However, we don't have the legislation to develop. Private sector would have to develop. At Libby Dam the private sector wants to do the developing rather than the government, and the private sector opposes governmental development because it competes with their business. Here, the Tribes don't want to promote recreation due to cultural resource sites.***

***Follow-up Corps response: On the positive side, we have issued licenses for fishing guide services, and we do not oppose private landowners from developing their own property, providing they comply with Corps of Engineers' easement restrictions.***

There's an influx of jet skiers. Trashing is a problem, too. Jet skiers are being "run-off" from other regional lakes, like Lake Chelan. Because there are no regulations on Rufus Woods Lake, they are likely to increase here; in fact we are seeing more all the time. Jet skiers can travel 60-70 miles per hour. On Lake Pend Oreille and Coeur d'Alene Lake they have regulations that are strictly enforced and so problems are under control.

***Follow-up Corps response: As of June 2000, U.S. Army Corps of Engineers park rangers have regularly patrolled the lake throughout the summer recreation season to provide for visitor assistance, enforce C.F.R. Title 36 regulations, conduct boat safety inspections, and distribute water safety literature.***

21. What about lake safety issues such as when winds come up, and the reservoir is lowered?

***A new emergency phone has been installed at the upstream boat ramp. You can only dial 911 from it unless you have a calling card because it's not a regular "phone booth" phone.***

There's the problem with the lake lowering and catching boaters unaware.

*We have notices on signs at all three boat launches (Seaton's Grove, the upstream boat ramp, and Bridgeport State Park) and in the brochures warning that fluctuations of two- to three-feet occur all the time. The Corps will monitor the situation to see if other actions are required.*

*Follow-up Corps response: At the present time, Chief Joseph Dam staff inform boaters about signs at boat ramps warning them of fluctuating pool levels.*

22. Is there a river fluctuation minimum? I'm concerned about irrigation pumps.

*Legally, Rufus Woods Lake can drop to a maximum of 26 feet below pool, which is to the 930-foot elevation, but this is rare. Usually it's a five- to six-foot vertical drop; 950-foot elevation is normally the lowest it is dropped. If the lake is to be dropped below the 950 elevation, resources staff at the dam notifies their mailing list of permit holders.*

23. Private landowner: Any further movement to begin paying at boat launches?

*The Corps has the authority to charge for boat launching. However, the project doesn't think that we should because we don't currently collect any other fees. The cost to collect fees would be more than what would be collected. The Seattle District office agrees. Currently, there is no pressure from headquarters to charge fees, but it could happen in the future. Especially if use increases; a catch-22 since we justified not collecting by saying we did not have enough use to warrant collecting. It's the same for day use fees in the picnic and day use areas. However, to repeat, the project is committed to not collecting fees for as long as we can.*

*Follow-up Corps response: As of the writing of this master plan, there has been increased pressure from headquarters to collect fees. One of the Corps' national performance measures is to recover 20% of recreation expenditures through fee collection. Beginning 2001, we will collect use data for the upstream boat ramp. Corps guidance is to not collect fees if the cost of collecting exceeds revenue. Currently, fees charged at Chief Joseph Dam only include usage of the group picnic shelter and for hosting special events.*

24. Brandt's Landing (23 acres) is fee land with a county-maintained access road. Could be a recreation area; it is currently being managed for wildlife in the interim. Can it be developed?

*The Corps is looking for input on this site. We can gradually put in tent sites, tables, and toilets over time but it is difficult to develop it all at once. The county needs to fix the road and grade it. The area is a good meeting place so it would need parking. The negative aspect of the site is that the water is too shallow for a boat dock. Positive aspects are that the fire concern is low and the site is flat. There could be sanitation concerns—can't boat in, but can walk in and party.*

*Follow-up Corps response: During summer 2001, improvements to the area will include a vault toilet, benches, and a fire ring.*

People drive off the road now to avoid the damaged road. I would like to see boat docks but keep the area primitive. Boaters want wind-protected areas. A pit toilet would be okay. Even a small fee to use the area would be acceptable. What about providing buoys for overnight boat camping?

*Coeur d'Alene Lake has provided yellow public docks for tying up boats. Swimming is allowed off the docks but you can't access the shoreline due to private property.*

***Follow-up Corps response: The area is too shallow for a boat dock; however, there is a community float in this location for boat mooring in conjunction with recreation activities.***

25. What's the status of the Nespelem Creek and Bar?

***It is Corps fee land. The Tribes may be interested in having it transferred to them if it is determined to be in excess to project needs.***

***Follow-up Corps response: The Tribes are not currently interested in pursuing the transfer of Nespelem Creek and Bar so it will remain under Corp' management. If the transfer is pursued in the future, protection of the site (cultural resources) must be considered.***

The Tribes ticket violators in the area and want permits for any activity so it wouldn't be worth developing on CCT land. Prefer primitive boat-in sites only.

26. What if the Corps proposes that the BLM and Corps swap the land at Rocky Flats for other public domain BLM land in a Memorandum of Agreement?

***We need to check on this. However, the problem is finding suitable sites. There just aren't many or any good alternative sites.***

27. Private landowner: What about a hatchery upstream for walleye?

***A hatchery was tried for raising walleye, but the cost was more to grow the fish and they ate each other. If released too small, there's nothing for them to eat. You can't grow them like trout. The Tribes are talking about another hatchery.***

28. Private landowner: How about a walking/bicycle trail along Pearl Hill Road to the county road to Brandt's Landing to the mitigation site? With some riprap you could repair the area where the road washed out and construct a trail. It's a quiet area and makes a nice place to walk.

***Our focus is on the north bank trail from the state park to the spillway viewpoint to the orientation area to Bridgeport. We have started construction on a short trail at the debris basin.***

29. What kind of numbers does the Corps have on vehicles at the upstream boat ramp?

***Fiscal Year 1998 showed 30,000 vehicles gross (varies to 24,000) and 35,000 vehicles in fiscal year 1999, less Corps vehicles. That's about 2,000 vehicles per month. In comparison, there were 865 vehicles using the area per month in 1982-83.***

***Follow-up Corps response: For the period November 1999 through October 2000, 33,000 vehicles used this area.***

30. I just want to say "good job" at providing the improvements at the debris area. The Corps might want to add more picnic tables. Why doesn't the Corps go on-site and ask fisherman what they want; most don't want to come to a public meeting but would likely have comments.

***The Corps has restrictions regarding formal written surveys. Only traffic-stop surveys for vehicles are authorized by the Office of Management and Budget. We also have to be careful with verbal questions if we're trying to do a formal survey. "Unnecessarily detaining the public" is not acceptable. However, informal and quick questions during the course of daily business would be all right.***

***Follow-up Corps response: The Office of Management and Budget granted approval to the Corps the last three years to distribute Customer Comment Cards. These cards were randomly distributed during summer 2000 to visitors using Corps facilities around Chief Joseph Dam. Perhaps you received one this year. If not, your input on any resource related issue may be sent to the Recreation and Natural Resource Manager at P.O. Box 1120, Bridgeport WA 98813. The phone number is 509-686-5501.***

**Written comments received at the public meeting, or mailed to the Seattle District office**

31. Bureau of Land Management: It is not clear to us how BLM withdrawn land or lands under agreement with the Corps of Engineers will be treated in this planning. Lands to be managed by BLM under agreement need to have BLM regulations considered throughout the process so as to not create confusion to the public. Consistency is important.

***BLM public domain lands have been addressed in this master plan.***

32. Bridgeport State Park: In the past 10 years there has been major increase in the use of Rufus Woods Lake. The number of boaters going upstream away from the improved areas of the Corps' boat launch and Bridgeport State Park has grown to the point that some type of sanitation facilities should be provided upstream. Maybe a couple of short piers and a couple of vault toilets.

***The Corps is concerned about the sanitation problem and has incorporated it into the proposed development for Brandt's Landing and Rocky Flats. Refer to Sections 7.2.2 and 7.2.3 respectively.***

33. Private landowner: Thank you for the opportunity to give input. The following suggestions are:

a. Form a partnership with the city of Bridgeport, county of Douglas, and Port of Douglas to build a marina with boat dockage, and fishing gear and support facilities at the boat dock on the Douglas County side, with a year-round, or at least nine months, usage.

***This would be a partnership between a private sector business and the city and county. Perhaps they will consider this when they review this master plan.***

***Follow-up Corps response: Chief Joseph Dam would support the city or county if they wanted to partner with a private entity to provide this service, but the Corps would not provide any funding. Proposed concessions such as a marina would follow U.S. Army Corps of Engineers regulatory and U.S. Department of Army licensing procedures.***

b. With a partnership, build boat-in primitive campsites with toilets at some of the [wildlife] mitigation sites. Collaborate with the Tribes on the tribal side of shore and with Douglas County on the county side of shore.

***The CCT has a campground on the Okanogan County shoreline that is managed by their Tribal Parks and Recreation Program. The Corps' wildlife mitigation sites must be managed in accordance with the Wildlife Mitigation Program Operation and Maintenance Manual with a focus of enhancing wildlife habitats, and providing environmental educational opportunities. In addition, as a result of the National Environmental Policy Act of 1969 (see Section 3.6.1), a supplement prepared for the 1981 pool raise of Rufus Woods Lake addressed potential recreation impacts that could result after the pool raise. It indicated that recreation will continue to be an incidental purpose of the Chief Joseph Dam project, and that specific proposed master plan actions for constructing remote***

*camping areas accessible by boat would need to be considered for further NEPA compliance before implementing. Refer to Section 7 for those low density recreation areas where the Corps is placing their focus.*

- c. Enthusiastically support wind surfing above the dam, and or jet skiing.

*Good suggestion. The Corps periodically conducts "stakeholder" meetings to help determine how the public prefers to recreate on and around Rufus Woods Lake and upper Lake Pateros and what recreational experience they desire upon leaving the area. Meetings incorporate local agencies, area businesses, special interest groups, and individuals who wish to be involved.*

- d. Get together with the city of Bridgeport and build a cooperative chamber of commerce and Corps of Engineers center at the visitor center. Sell souvenirs from the Tribes, city of Bridgeport, Civilian Welfare Council items, and so on.

*The Corps has a proposed design for a new visitor center to be located near the orientation area. Construction of such a facility would be funded by sources outside the Corps and no potential partners have come forward yet. The CCT is reviewing locations for a new fish hatchery that could be tied to the new visitor center. Non-profit cooperating agencies could be authorized to sell certain items at the new facility. This is a long-term project and may not be approved or funded unless through a partnership. Refer to Section 5.2.1g regarding the current and future visitor center.*

- e. Support a hatchery above the dam for trout to be placed in Rufus Woods Lake to build a fishery for anglers, which will bring more visitors and usage.

*Question 27 above addresses a hatchery for walleye. As mentioned in the previous comment, the CCT is looking for salmon hatchery locations. The Corps supports these efforts with considerations that the hydropower operations are not adversely affected.*

- f. View the city of Bridgeport as friends and the chamber of commerce as allies to do great things.

*Excellent suggestion. As described in 33.c. above, stakeholder meetings provide the avenue to integrate ideas for the betterment of everyone.*

Draft review comments will be inserted here for the Final Master Plan

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# **APPENDIX G**

## **ABBREVIATIONS AND ACRONYMS**



Access Board	U.S. Architectural and Transportation Barriers Compliance Board
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act (of 1990)
ADAAG	ADA Accessibility Guidelines for Building and Facilities
ARPA	Archaeological Resources Protection Act (of 1979)
BIA	Bureau of Indian Affairs (U.S. Department of Interior)
BLM	Bureau of Land Management (U.S. Department of Interior)
BOR	Bureau of Reclamation (U.S. Department of Interior)
BPA	Bonneville Power Administration (U.S. Department of Energy)
CCT	Colville Confederated Tribes (Confederated Tribes of the Colville Reservation)
CFR	Code of Federal Regulations
CJD	Chief Joseph Dam (U.S. Army Corps of Engineers)
Cong.	Congress
DM	Design Memorandum (U.S. Army Corps of Engineers)
DNR	Department of Natural Resources (Washington State)
DOD	U.S. Department of Defense
EIS	Environmental Impact Statement
EO	Executive Order
EP	Engineering Pamphlet (U.S. Army Corps of Engineers)
ER	Engineer Regulation (U.S. Army Corps of Engineers)
ESA	Endangered Species Act (of 1973)
ETL	Engineer Technical Letter
GOES	Geostationary Operational Environmental Satellite (National Oceanic and Atmospheric Administration)
GSA	General Services Administration (federal agency created July 1, 1949)
H. Doc.	House Document
HPMP	Historic Properties Management Plan
LEED	Leadership in Energy and Environmental Design
MRM	Multiple Resource Management
NAGPRA	Native American Grave Protection and Repatriation Act (of 1990)
NEPA	National Environmental Policy Act (of 1969)
NGVD	National Geodetic Vertical Datum
NHPA	National Historic Preservation Act (of 1966)
NMFS	National Marine Fisheries Service (division of the National Oceanic and Atmospheric Administration under the U.S. Department of Commerce)
O&M	operation and maintenance
OMP	Operational Management Plan
PD	public domain (lands)
PL	Public Law
PUD	Public Utilities District
RM	river mile
Sess.	Session
SHPO	(Washington) State Historic Preservation Officer
SR	State Route

UFAS	Uniform Federal Accessibility Standards
U.S.	Unites States (of America)
USC	U.S. Code (Annotated)
USFWS	U.S. Fish and Wildlife Service (U.S. Department of Interior)
USGS	U.S. Geological Survey (U.S. Department of Interior)
WDFW	Washington State Department of Fish and Wildlife (formerly Washington State Department of Game and Washington State Department of Wildlife)
WSDOT	Washington State Department of Transportation